

FLYING LESSONS for February 26, 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:

Safe arrival is an exercise in airspeed control. Flying at the correct airspeed over the runway threshold determines two things: the point at which you'll touch down on the runway, and the distance it'll take to come to a stop once the aircraft touches down.

Even just a few knots added airspeed will dramatically affect your runway requirement. In most light airplanes total distance from 50 feet above the ground to the end of the landing roll will increase as much as 10% for every five knots airspeed above optimum on final approach.

If you're too fast it will take more time—more distance—to slow to touchdown speed. The airplane will “float” in the flare, moving the eventual touchdown point farther toward the far end of the runway.

Trying to force the airplane onto the ground at too fast an airspeed invites a bounce, potentially loss of directional control and/or possible landing gear damage.

If you touch down too fast, even if you maintain directional control and do not damage the aircraft, the airplane will require more distance to dissipate inertia and come to a stop.

All told, excessive airspeed on final approach promises to increase total landing distance significantly, and creates potential for a runway overrun or lost control with a departure off the side of the runway.

If you don't touch down at a point where there's sufficient runway remaining to safely stop you really have no other option but to go around. Many accidents occur when the pilot delays the go-around decision, when he/she does not decisively call off the landing attempt with timely authority.

Go-around, too, requires precise airspeed control. Fly too fast and your climb gradient may not be great enough to clear obstacles. Too slow and the airplane may stall. Aggravate conditions by steeply banking or turning and a stall is more likely, or the airplane may “fall off on a wing” into an incipient spiral that drops the airplane very quickly into the ground.

If you're not firmly on the runway with ample room to come to a stop, with a reserve remaining just in case, go around. To try to “salvage the landing” by forcing the airplane down, or recovering to touch down only to run off the end of the runway because of excessive speed.

The FAA [Airplane Flying Handbook](#) tells us

The assumption that an aborted landing is invariably the consequence of a poor approach, which in turn is due to insufficient experience or skill, is a fallacy. The go-around is not strictly an emergency procedure. It is a *normal* maneuver that may at times be used in an emergency situation. Like any other normal maneuver, the go-around must be practiced and perfected. The flight instructor should emphasize early on, and the student pilot should be made to

understand, that the go-around maneuver is an alternative to any approach and/or landing.

When you make the decision to go around:

1. **Add power.** Power arrests further descent without causing airspeed to decay. This includes ensuring piston engines have sufficient (but not excessive) fuel flow to provide takeoff power under the current density altitude conditions. If the airplane is properly trimmed adding power will also cause the nose to pitch toward a climb attitude.
2. **Adjust pitch** to the initial climb attitude, being careful to establish a speed defined by the Pilot's Operating Handbook or that approximates a normal initial climb speed.
3. **Reduce flaps**, if more than a small amount of flap (10° to 15°) is extended. Full or nearly full flaps add more drag than they increase lift, and will inhibit climb as well as cause airspeed to decay.

Per the [Airplane Flying Handbook](#):

Unless otherwise specified in the AFM/POH, it is generally recommended that flaps be retracted (at least partially) *before* retracting [retractable] landing gear—for two reasons. First, on most airplanes full flaps produce more drag than the landing gear; and second, in case the airplane should inadvertently touch down as the go-around is initiated, it is most desirable to have the landing gear in the down and locked position. **After a positive rate of climb is established**, the landing gear can be retracted. [emphasis added]

See http://www.faa.gov/library/manuals/aircraft/airplane_handbook/media/faa-h-8083-3a-4of7.pdf

Practice precise airspeed control in the final stages of landing, and in the first moments of a go-around or missed approach. Find yourself too fast on short final and you may be safest to go around before getting any closer to the ground.

Questions? Comments? Email me at mastery.flight.training@cox.net

Debrief: Readers comment on recent *FLYING LESSONS*:

Building upon the *FLYING LESSONS* discussion about mis-fueling, reader Shirley Roberts recommends some additional safeguards, most of which consider truck fueling rather than self-fueling:

1. Speak kindly and friendly to the person doing the refueling. You can assess if the person has a good attitude; i.e., whether he/she gives a damn.
2. Watch your aircraft being fueled.
3. Ensure the correct truck has been brought to the airplane.
4. Ask the fueler how recently the truck has been loaded.
5. Ask if other aircraft have been fueled that day by the same truck since it was loaded, and if those aircraft have departed.
6. Get close enough to smell the fuel as it is going into your tanks.
7. Upon sumping the fuel before departing, feel the fuel (then wash your fingers) and smell it again as well as look at it.

Thanks, Shirley!

Adding to the *FLYING LESSONS* discussion of flight in icing conditions and the hazard of tailplane stalls, well-known aviation writer and [Artful Flying](#) author Michael Maya Charles writes:

Tom, you are doing some nice work with your weekly "FLYING LESSONS" newsletter. This week's edition was especially well done, a summary of the terrifying dangers of icing and tailplane stalls, which I'd be willing to bet next month's paycheck was the cause of the Q400 tragedy in New York [recently].

I first experienced this phenomenon about 35 years ago when I was flying auto parts in an Aztec around Lake Erie. I had collected a huge load of ice (common around the Lakes), and was shooting the ILS approach to Cleveland's Burke Lakefront Airport. When I extended the flaps, the stabilator began to pulse enthusiastically and rapidly; it felt suddenly ineffective in my hands. What does a (very scared) young pilot do? Undo the last thing I did. Flaps up! I added a huge dose of extra speed for the ice, and touched down at over 100 knots -- actually, the airplane stalled ungracefully to the runway as I reduced the power in the flare. Ugly.

This was, of course, before airplanes were certified for flight into "known icing" conditions, though the Aztec I was flying had all the icing options available at the time: boots, hot props, windshield hot plate, etc.; it was also before NASA bravely flew their stodgy Twotter around the Great Lakes in some of the same ugly icing conditions, "discovering" that now known dark corner called "tailplane stalls".

If there's one thing to leave with your readers, it's this: **Mother Nature can throw more ice at you than your GA airplane can handle.** I don't care if the FAA certified it to fly into known icing conditions. Don't allow the stuff to start stacking up on your airplane's leading edges. Keep the speed up and get out of the ice -- NOW. And live to fly another day.

Keep up the good work! Michael

Captain Michael Maya Charles
www.artfulpublishing.com

And thank you for the wisdom of your experience, Michael!

Retired traffic controller, pilot and aviation safety consultant (and *FLYING LESSONS* reader)
Norm Scroggins very kindly adds:

“You have the BEST insight as to what makes an airplane fly (or not fly) of anyone I know.”

That's very kind, Norm. Thank you.

Questions? Comments? Send your insights to mastery.flight.training@cox.net

NEXT in *FLYING LESSONS*

We don't know yet what we'll be discussing in the next issue of *FLYING LESSONS*, but I do know it will appear not next week, but on March 11, 2009. Mastery Flight Training, Inc. is traveling to Armidale, NSW Australia to deliver three days of classroom instruction through the generosity of the Australian Bonanza Society so there will be no *FLYING LESSONS* report next week.

Fly safe, and have fun!

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



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