



# FLYING LESSONS for February 21, 2019

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National Flight Instructor Hall of Fame inductee

*FLYING LESSONS* uses recent 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 airplane have little direct bearing on the possible causes of aircraft accidents—but knowing how your airplane's systems respond can make the difference as a scenario unfolds. So apply these *FLYING LESSONS* to the specific 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:***

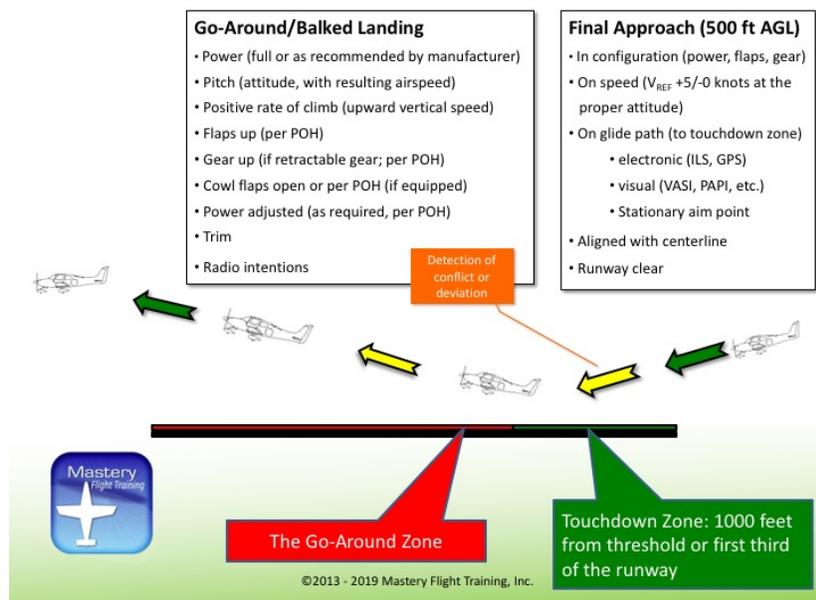
**Power, pitch, positive rate...**this is the mantra of the go-around or bailed landing procedure. Once established in climb, clean up the airframe (flaps up, gear up as appropriate) and configure it for climb (cowl flaps open if equipped).

**When should you go around?** The need for a go-around can be obvious, or it can be a very personal thing. Is an airplane, animal or obstacle on the runway? Is the airplane too fast, or descending too rapidly, or aimed too far down the runway? Are you having difficulty maintaining runway alignment in a crosswind? Does the landing simply not "feel right"? Any of these indications call for breaking off the landing, going around and trying again...or perhaps diverting to another airport.

**Going around** is as natural a part of flying as landing or taking off...or it should be, if you occasionally practice the task.

**On short final approach**, say, 500 feet Above Ground Level (AGL), check that *all* the following apply:

- **The airplane is properly configured.** This means the power is set as normal or expected, the flaps are in the planned landing position and retractable gear, as applicable, is down.
- **The airplane is on speed.** At the proper landing attitude (this is an important configuration



cross-check), the airspeed is at your final approach speed  $+5/-0$  knots— $V_{REF} = 1.3 \times V_{SO}$  or as recommended by the Pilot's Operating Handbook (POH), including added speed for a gust factor or if landing with partial or no flaps.

- **The airplane is on glide path.** This may be an electronic glideslope from an ILS or derived by GPS, a visual glide path following a VASI, PAPI or similar guidance, or simply a stationary aim point on the runway that is within the touchdown zone. The touchdown zone is  $\pm 100$  feet of an identified spot (U.S. Commercial Pilot standard), approximately 1000 feet from the runway threshold or one-third of the total runway length from the threshold, whichever is shorter.
- **The airplane is aligned with the runway centerline,** and you are having no trouble maintaining alignment.
- **The runway is clear** and, at a tower-controlled airport, you are cleared to land.

**If any** of the above criteria is *not* the case, immediately initiate a go-around or bailed landing procedure. Do not try to “salvage” an out-of-tolerance approach within 500 feet of the ground.

“**On the go,**” satisfy these criteria:

- **Power.** Advance the power to full or as recommended by the airplane manufacturer. This includes leaning the mixture for best power at high density altitudes in most normally aspirated, piston-powered airplanes (some engines do this automatically).
- **Pitch.** Establish the proper pitch attitude. In general, start with the attitude that results in  $V_X$ , or Best Angle of Climb speed. If you have no obstacles you can establish  $V_Y$ , or Best Rate of Climb speed, realizing that the airplane will cover more ground to reach a given altitude. In multiengine airplanes you should establish a shallow climb attitude and accelerate to  $V_{YSE}$ , or “blue line” speed, before pitching up further to  $V_{YME}$ —*unless* you have to clear an obstacle, when  $V_{XME}$  attitude is appropriate at the beginning of the go-around.
- **Positive rate.** Use the Vertical Speed Indicator (VSI) to confirm the airplane is maintaining a positive rate of climb.
- **Flaps up** as recommended by the POH.
- **Gear up** as applicable, as recommended by the POH.
- **Cowl flaps open**, if equipped, as recommended by the POH.
- **Power adjusted**, as necessary, if the POH mandates or recommends a power reduction for climb.
- **Trim** the airplane for climb.
- **Radio your intentions** to other airplanes and/or ATC as appropriate.

**Beware the somatogravic effect**, or the “[false climb illusion](#).” As an aircraft accelerates, the sensory hairs in the pilot's inner ear bend rearward under inertia. This is the same movement that occurs when an airplane pitches upward steeply. If the rate of acceleration is great, and the outside visibility is limited by darkness or obstructions to vision, the pilot may interpret the somatogravic effect as a steep climbout and instinctively push forward on the controls, reducing the climb or even putting the airplane into a descent. There are many instances when an airplane impacted obstacles far beyond the departure end of the runway during takeoff or go-around at night or in severely limited visibility, and the “false climb illusion” is suspected as a contributing factor.

**Your defense** against the somatogravic effect is to establish the proper attitude, through the combination of visual references backed up by the attitude indicator when visibility is impaired but

generally good, and solely by reference to instruments on a dark-night departure or go-around, or when taking off or executing a balked landing in reduced visibility or instrument conditions.

See <http://aeromedical.org/Articles/dnt.html>

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See <https://www.pilotworkshop.com/botched-go-around?ad=tuner-goaround-botch>

## Debrief: Readers write about recent *FLYING LESSONS*:

I had an unusually high number of reader comments about [last week's LESSONS](#) about steep spirals, how they are entered and the many scenarios where spiral tendencies are a risk that the pilot must manage. Almost all were laudatory (thank you), while a few readers suggested that, although the message was on target it may have been too big a topic to try to cover in a single week's report. I apologize if I went too long trying to cover all the nuances. A couple of readers remarked that my description of pitch stability in airplanes in developed spins was not true in all cases, or even in many of them—specifically, T-34s are apparently difficult to get into a real spin unless at an aft center of gravity, wanting more to enter a spiral even from a stalling flight condition, and once in a spin the nose of the airplane describes a circle in pitch as the airplane descends at an otherwise stable speed, rotational speed and rate of descent. Apparently T-6s, both the World War II and current Beechcraft type, have a similar pitch precession in a spin. I reconnected with some excellent, extremely knowledgeable pilots to confirm what several of my readers said—that alone was worth it. Yet more good reason why I, like anyone else, need education and a good transition on specific airplane types whether moving up or down in airplane capability. Thank you all for your comments.

See <http://www.mastery-flight-training.com/20190214-flying-lessons.pdf>

Reader Freeman Ford asked a specific question about last week's report:

Very informative was your piece on steep turns gone bad. You cite circling to land under adverse conditions as a common cause.

What do you think about landing downwind if the runway is sufficiently long and the tailwind component reasonable thus avoiding circling in dubious conditions? I fly a P-Baron [a 58P Pressurized Baron, a heavy "light twin" with a high landing speed—tt] out of Palo Alto, California (KPAO) with a very short runway. Clearly landing downwind would spoil my day.

Our manufacturing plant is in Chico, CA (KCIC) with a very long WWII runway. I've not had to do it in actual [instrument] conditions but have landed downwind for practice. Energy control is critical; I must use full flaps, and vortex generators help too. But then I get lots of practice after fifty or so years from flying out of KPAO!

Again, thanks for your continual flight wisdom. When do you ever sleep?

Thanks, Freeman. If there is sufficient runway available and the pilot touches down in the usual touchdown zone, then a downwind landing can be an acceptable risk. The negative effect of a given amount of tailwind is much greater than the positive impact of the same amount of headwind, however. So as you said you would need a lot more runway in a P-Baron than you have at Palo Alto! And it's about my bedtime.

Reader Chris Larson makes a good point:

It's not totally accurate to say that the graveyard spiral maneuver is not taught to student pilots.

Actually this maneuver (graveyard spiral) *is* taught to aspiring glider pilots as a "spiral dive." One of the undesirable things we are close to and need to know how to recover from... so we enter and recover from them prior to earning our Private Pilot [Glider]. Why? We routinely bank and thermal at 45 degrees (or steeper in very tight thermals), so we need to know not only about overbanking tendency but also how to recognize and recover from a spiral dive.

Point taken...the steep spiral is taught to pilots pursuing a glider rating. Another example of what may be learned by aerial crosstraining...in this case, something taught in gliders as noted here, that is relevant to the pilot of a heavy piston twin from the earlier comment. Thanks, Chris.

Questions? Comments? Suggestions? Let us know, at [mastery.flight.training@cox.net](mailto:mastery.flight.training@cox.net)

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