

Thomas P. Turner's Mastery of Flight

www.thomaspturner.com

FLYING LESSONS for February 8, 2024

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 most 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 in your success as the 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:

What goes around, comes around

From an FAA preliminary report:

A Beech A35 [T-34A Mentor] “landed gear up and slid off the side of the runway into the dirt...”
The two aboard were unhurt and the airplane suffered “minor” damage.

Unofficial witness reports posted on various social media state the vintage military trainer (a US Air Force veteran painted in US Navy colors) made an approach to the runway only to perform a go-around for unknown reasons. When the pilot came around again for another landing the landing gear was not extended, with the all-too-common result.

Multiple trips around the circuit provide the opportunity to fine-tune technique and hone skills. Unfortunately, pattern after pattern can also devolve into distraction and complacency...two factors that often lead to missed actions including a gear-up landing.

Sometimes pilots talk and post online that, when staying in the traffic pattern in a retractable gear airplane you should leave the gear down. The idea is that you won't forget to extend the landing gear if it's already down.

I suggest, however, that altering your gear technique by leaving the wheels down robs you of most of the training benefit of practicing multiple landings, which is to develop good habits as much as to master the flare and touchdown. **Leaving the gear down may actually make a gear up landing more likely** on a later flight, by reinforcing behaviors that run counter to normal gear extension and confirmation.

If you put the landing gear down to begin your descent from pattern height by adding drag—**gear down to go down**—you reinforce confirming gear extension by being able to evaluate:

- **Sound.** The gear motor sounds right and runs for the proper amount of time. The slipstream noise changes as expected.
- **Feel.** The airplane pitch changes as expected. The airplane decelerates initially then settles into a descent.
- **Performance.** Attitude, airspeed and vertical speed all are as normally expected. None of these measures of performance are unusual or in conflict with the others.

- **Sight.** Gear indicators confirm proper extension. If the wheels are visible directly or in gear mirrors, they appear fully down and locked.

But if you leave the landing gear down in the landing circuit you don't get the experience of confirming gear extension. In fact, the big throttle reduction needed to begin your descent reinforces bad habits that can mask forgetting to extend the gear.

I've been told that in the piston T-34B era the U.S. Navy at one time taught its pilots to leave the landing gear down in closed traffic patterns, but later ordered a change to more normal operations—retracting the wheels after takeoff and lowering them again to descend from pattern altitude—after an increase in gear-up landings by solo students at remote practice airfields. I can't confirm this, but perhaps a past Naval aviator or instructor can tell me more.

From an instructional standpoint, however, it makes sense that leaving the gear down robs the pilot of much of the experience he/she is trying to get when flying trips around the pattern. I requires an abnormal technique that runs the chance of making a later gear-up landing more likely.

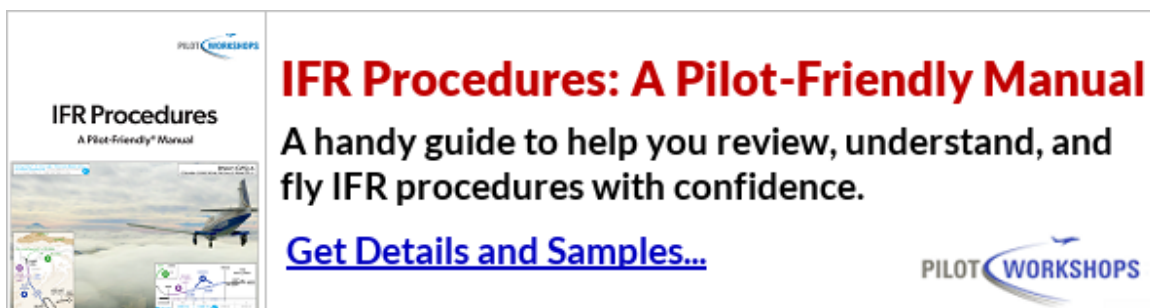
The same goes for other operations, in fixed gear airplanes as well as retracts. Practice should reinforce behaviors you want to exhibit in your day-to-day flying. **Train the way you fly, fly the way you train.**

One of the FaceBook witnesses to the T-34 gear up, a senior flight instructor who was preflighting an airplane with a student when he observed the crash, exhibited the FAA-identified hazardous attitude of **resignation** when he wrote:

It happens to everyone at some point. It's just embarrassing. It happened to me while doing a Power Off 180 while I was training toward my complex endorsement 30 years ago, but my instructor told me to go around. I applied full power and tried to raise the gear, but it was already up! Nice not to have to worry about that mistake in my elderly years as a Cirrus instructor.

No, it doesn't happen to everyone at some point. I prefer to learn from experience, both my own and by learning from the experiences of others, to **replace resignation with determination** to manage risks. **What goes around**—the habits we reinforce—**comes around** when we least expect. Know the scenarios that are most commonly contributors to accidents, and it's more likely you'll follow standard procedures to avoid repeating accident history.

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



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Debrief: Readers write about recent *FLYING LESSONS*:

Reader Damon Overboe writes about the [January 11th Mastery of Flight](#) and our discussion of the runway length required to take off, climb to 50 feet above ground level (AGL), lose an engine and still be able to land on the remaining runway:

I actually was afforded the opportunity to practice this once at the school where I trained for CFI last fall in a Cessna 172. They train a lot of Norwegian students who are required to take

off, **climb at Vx** to 50 feet, then simulate an engine failure and land back on the runway. It was slightly unnerving to say the least.

Prior to this, a common discussion in our club is *don't climb at Vx unless absolutely necessary* to pass a checkride or clear an obstacle (and we rarely if ever have those situations) **because of the amount of rapid, nose over pitch you need to do** [to avoid a stall if the engine fails]. I speculate that is the main reason the Norwegian students were required to do this. *As an American citizen, I wonder if they made me do this maneuver because of my Norwegian heritage? :)*

I think it was great to have experienced that and learn what to expect. The instructor and I talked through it before and he said, "get light in the pants, but don't go floating" and said we should go slightly negative [in G load] but not to overdo it; maintain control of the aircraft, we just have to **get the nose back down to a landing attitude**.

We were on a 7000-foot runway, density altitude was typically between 1000 and 1500 [feet], and usually we had a 10-15 knot direct headwind there. We accomplished this in about 3500 feet. I know that doesn't account for *the startle factor* since we briefed this ahead of time and I knew it was coming. But we can still **prepare ourselves** for that **on every takeoff**: "when the engine fails, if I'm at xxx MSL or below, I am landing on the runway ahead." (*The MSL was another trick I picked up there; do the math on the ground during the briefing so I don't have to think "what is 500 AGL?" while in the air.*)

POH [*Pilot's Operating Handbook*] numbers say it possibly could be done in 2500 feet, or possibly less under those conditions with extreme braking and assuming you can easily deploy full flaps in that moment. I'm sure there could be plenty of debate about whether to add any amount of flaps in that moment or not. For me that comes down to what aircraft I'm in, how well I know it, how quickly I can deploy the flaps, and whether I can overpower it manually and maintain control while going 0 to full flaps quickly without adjusting trim. I'll think about that more in the future in each plane.

I doubt this is something I'll practice again soon. But I'm curious about your thoughts on practicing this. I know having done this even just once, it's of some comfort should the need arise to do this in a real emergency.

I think this is a valuable experience if done with an instructor proficient in the airplane type and experienced in maximum performance takeoffs and landings. I'd simulate it with a "hard deck" at altitude before trying it close to the runway. For realism you might count three seconds after the simulated power loss before **PUSH**ing the nose down to the short field landing attitude and **HOLD**ing heading with rudder, keeping aileron neutral until well above stall speed. I described the **PUSH and HOLD** technique most recently in [the January 11 report](#). Thank you, Damon.

See <https://thomaspturner.com/wp-content/uploads/2024/01/2024.0111-FLYING-LESSONS.pdf>

Reader Gerry Visel continues:

Your *FLYING LESSONS* of this morning highlights the need to keep the wings level after a loss of power. That reminded me of some pictures of Russian fighter aircraft, including the Mig-15, Mig-23, Mig-29, and Su-27, at least, which have a wide white stripe down the center of their control panel. The stripe is a reminder to the pilots to center the stick if you get into a spin! Perhaps we could learn something!



That is interesting, Gerry. Thank you.

See https://en.wikipedia.org/wiki/Mikoyan-Gurevich_MiG-23#/media/File:Cockpit_MiG23_high_resolution.jpg

Reader Ben Sclair, editor of [General Aviation News](#), adds:

Reading through the inflight distraction Debriefs, I can't help but think **more pilots need to experience flight in a Cub, with the clamshell door open**. The fun of cruising around on a warm summer evening makes for a delightful flight. It is neither quiet nor calm in the cockpit. **It is both noisy and windy**, especially in the back seat. But the plane flies just fine.

That experience will pay off when a door pops open in a plane where the door should remain secured for the entirety of the flight.

See www.generalaviationnews.com

I don't know if that would help a pilot in the first seconds after the noise and pressure increase, Ben, but it might help after the initial surprise. Regardless, when can I come fly a Cub with you?

Also writing about door-open distractions, reader Jack Spitler continues:

Decades ago one of my crew member buddies domiciled at PANC [Anchorage, Alaska] bought a Wilga and flew it up the coast on a lovely summer day from the [Lower] 48. He decided to open the door in flight (up against the wing, similar to the Cessna window) to further enjoy an open ride. His jacket departed the rear seat in the breeze...along with the \$5000 USD it contained to buy fuel for the trip.

Thanks for contributing to safe operation so far as you are able.

That sounds very cold in addition to being very disappointing, Jack. Thanks for all your comments.

Wrapping up this week, flight instructor, SAFE executive director and corporate jet pilot David St. George writes:

Thanks for *FLYING LESSONS*. **We are all ready and able to detect the "big problems" (excessive mag drop, needles in the red or roughness in the engine) but can easily miss (or ignore) subtle**

"whispered" clues of a problem, especially since ***we all want to go flying***. This is called "motivated perception," we see/hear what we expect and/or want to hear/see and often rationalize away subtle clues.

Your reader who wrote [the Debrief item at right] deserves huge credit for paying heed to a subtle "whispered" indication (and it probably saved his life)! We all need to be alert for "whispered messages," **the consequences of rationalizing it away are too great.**

Reader and monthly supporter Erik Hoel writes:

Your **Never Forget** article was interesting – really hoping/praying that the wife survives. Nothing could be worse than losing your wife of children in this manner.

The inflight fire on takeoff stuck a chord. About two months ago, I was doing the preflight warmup in my N35 (N542T) with my CFI Earl Schofield when I noticed strange behavior when leaning the engine after startup (at KREI, elevation ~1550'). Typically, at 1000 rpm I would twist (half-turn) the mixture counterclockwise about 17-18 times to hit peak rpm prior to it declining due to overleaning. After about 5-7 half turns, I noticed that rpm never increased, and only started falling. We repeated this process a number of times, with Earl himself giving it a try or two. Given that I hadn't flown in six weeks (due to a partial Achilles tendon tear), we initially dismissed this as the engine not being run recently and proceeded to the runup area.

A normal human reaction: "motivated perception," dismiss and normalize, rationalizing irregularities!

As we completed the standard warmup checklist, we again tried leaning the engine. Same as before. We then decided that something wasn't right and headed back to the hangar. We parked the plane and hopped out. The cowling was dripping fairly rapidly an absurd amount of fuel. Yikes. **Listening to that "whispered" indication and taking time to investigate root cause; lifesaver (not luck)!**

We grabbed my A&P (Tony Higa – quite excellent) and he checked it out. After pulling the chine panels (not sure what they are called), he located the **sizeable leak from the throttle assembly**. There were several cups worth of fuel that had also pooled in the cowling area where a drain was not available at the low spot – probably 6-12" from the exhaust pipe. He looked at me and said I was having **the luckiest day ever**.

It was really smart to turn around when something seemed off – this was a big life lesson for me. **(and all "Flying Lessons" readers!!)**

Way back in the November 2011 issue of *AOPA Pilot* I co-wrote—with *FLYING LESSONS* reader Dr. Loren Sheren, an article titled "[Pilots Are Pessimists, and Pilots Are Optimists](#)" (the title is messed up in AOPA's online archives). The gist of the article is that **in a training environment pilots are pessimists**. We expect problems, we look for trouble. If things are quiet we're certain we've missed something and pick up our scan and monitoring. **But once the training is**

complete and the time is in our logbook, pilots are optimists. We expect everything to work well, we become complacent, we rationalize away even blatant indications that something is wrong. As you say, David, **we want to go flying.** We want to **make our destination**; we want to **master the environment, solve problems and demonstrate our superior skill** by heroically overcoming hazards and emergencies (perhaps even hoping to be given the chance). The trick, as you agree, is to **transfer some of our skepticism in training to our daily flying**, so we're looking for trouble and ready to respond when it appears...even if it's just a whisper. Thank you, David.

See <https://www.aopa.org/news-and-media/all-news/2011/november/pilot/technique-pilots-are-pessimists-and-optimists>

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