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FLYING LESSONS for March 6, 2025

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:

Loss of Directional Control Season

It's almost that time of year again for me to make a list of Loss of Directional Control - Runway accidents and note a substantial uptick in the number of LODC-R mishaps in the past few weeks. It seems every year there is a surge in runway excursions following the pilot's inability to maintain centerline (or even close to centerline).

This year let's use what we've learned—or *should* have learned—from this annual re-run of the accident record. Let's **get ahead of the problem** and review the *LESSONS* from these annual repeats…and what we might do to avoid repeating them again. Here are some *LESSONS* from the LODC-R record:

LODC-R is a situation in which the pilot is unable to keep the airplane aligned with the runway during takeoff or landing. In extreme cases one or more of these may occur:

- The airplane departs the runway surface to one side or the other.
- The airplane swerves sharply enough that a wingtip makes contact with the ground.
- Side loads are applied to the landing gear resulting in overload or fatigue damage. The gear may collapse immediately or the fatigue may cause the gear to collapse much later, perhaps even in a perfectly controlled takeoff or landing.

Wind is the usual suspect in a LODC-R mishap. My research over may years, however, shows that the crosswind component is less than 10 knots in almost all LODC-R reported events… below the maximum demonstrated crosswind component of almost all airplanes, and well below what most designs can handle with a skilled and crosswind-current pilot at the controls. **My theory:** the wind is only one factor LODC-R events, but pilots become complacent when the crosswind component is less than 10 knots and they are less likely to actively apply crosswind controls.

If you want to get good at crosswinds, get your tailwheel endorsement. At least that's what everyone says. Yet, although tricycle gear airplanes have far too many LODC-R crashes, proportionately tailwheel types have even more—simply being a tailwheel pilot is not the solution to crosswind control. No matter what you fly, let's reconsider what it takes to **master crosswind takeoffs and landings**.

Know the wind. Most tablet-based flight planning software will tell you the crosswind component when you look at runway information. If you don't use this kind of software, or your tablet can't access updated surface wind information in flight, you can estimate using a technique I call **the one-third, two-thirds, 100% rule**. If the difference between runway heading and the surface wind is within 30 degrees, assume the crosswind component to be 1/3rd of the reported wind speed. If the difference is between 30 and 45 degrees, estimate the crosswind to be 2/3rd the wind speed. If the difference between runway heading and wind direction is more than 45 degrees, assume the crosswind component to be equal to the reported wind speed. This technique sometimes overestimates the crosswind component, but it is an easy way to prepare for the worst—or decide to use a different runway.

Anticipate how the winds will affect your airplane. Don't say "I have a seven-knot crosswind," think about it like this:

I have a seven-knot crosswind from the left. That is roughly half the maximum demonstrated crosswind for this airplane, and close to the most crosswind I've flown in the last month. Because of my airplane's left-turning tendencies, the crosswind from the left will have a greater effect than if it was from the right, so I'll have to apply more control input to counter it.

Pilot training emphasizes computing the crosswind component for takeoff, but many instructors do not stress **computing the crosswind component for landing** as well. Yet far more LODC-R events happen during landing. Evaluate the crosswind before entering the pattern. Brief the crosswind aspect of the landing—and if the crosswind component is near or beyond your limits use a different runway with less of a crosswind component, if one is available, or divert to an airport with more favorable winds.

Knowing the strength and direction of crosswinds is only good if you apply the controls correctly to compensate for those winds. Two techniques will help you master crosswinds:

Taxi controls: "Climb into the wind, dive away from the wind." This mnemonic helps you visualize that, when taxiing into a crosswind, you should have the stick (or wheel) back and the aileron control deflected toward the direction of the wind…as if you are climbing into the wind. This helps keep the upwind wing down and the wheels firmly on the ground.

Taking off is the process of taxiing faster and faster until you are flying, and landing is the process of slowing from landing speed through fast taxi to normal taxing speed. **In a crosswind takeoff, begin "climbing into the wind"** with the aileron fully deflected, gradually reducing control deflection as the airplane accelerates and airflow makes the controls more effective. **In a crosswind landing,** begin with the control deflection necessary for crosswind control at touchdown, and gradually increase those inputs as the airplane decelerates and the controls lose effectiveness at slower speed.

Falling leaf: The airplane's rudder is the primary control for maintaining direction during the takeoff and landing rolls. A maneuver some instructors use to make rudder your instinctive corrective response is called the "falling leaf." A falling leaf is a sustained power-off stall. If a wing begins to drop you "pick it up" with rudder alone (moving aileron often aggravates a stall). This will usually induce a wing drop in the other direction, so you pick up that wing with rudder as well. In a sustained stall you can "walk" the airplane back and forth with short applications of rudder. **The intent of this maneuver**, whether in its usual context as an introductory aerobatic exercise or as a means of training directional control, **is to develop instinctive use of rudder** to correct for left/right deviations during takeoff or landing. Don't fly the falling leaf without getting some training first. Ask around for an instructor who is practiced and confident teaching the falling leaf maneuver.

If you think in terms of transitions ***from taxi to takeoff*** and ***from landing to taxi*** and move the controls appropriately, and reinforce prompt and instinctive use of rudder as the primary directional control on the ground, you'll be better prepared for crosswinds.

Make precision your SOP. Many LODC-R mishaps happen when crosswinds are relatively light. It's not that the winds exceed the capability of the airplane, it's that the pilot is not focused on crosswind control. To keep your skills honed and your attention sharp, make flying with precision your Standard Operating Procedure (SOP):

Use the proper crosswind taxi control technique even when the winds are light. There is no crosswind that doesn't require at least some crosswind control. If you make observing the strength and relative direction of the wind and applying the proper inputs SOP, it will be natural for you to do so without much thought when the conditions require.

Practice taxiing, taking off and landing on the center lines. Keep in the habit of correcting even minor deviations from center, knowing that it's easier to make small corrections to fix small deviations than it is to make big corrections to cover big directional mistakes.

Check that you are on speed, on glide path, and are aligned with and tracking the runway center line as you cross the runway threshold for landing. If you have not met all these criteria, **go around** before you touch down. Don't try to fix a speed or alignment problem in the flare or once you are on the runway—that's too late.

Know your crosswind limitations, both the aircraft's and yours personally that result from recent practice and experience. Choose not to fly, pick a different runway, or if you're in the air, divert to another airport if needed for a crosswind well within your current limitations.

Fly the airplane from start up to shut down. Don't relax or freeze up on your control inputs during takeoff or landing.

Getting your tailwheel endorsement is a good way to practice control inputs that will make you better at handling crosswinds. But you don't have to fly a tail wheel airplane to get better at crosswind control, and even tailwheel pilots need to constantly work at retaining and improving their crosswind skills.

Know the winds, use your controls properly, and make precision flying your SOP, and you'll better **master** your airplane in crosswinds.

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

Debrief

Readers write about previous *LESSONS*

Reader Chris Anderson writes about last week's *LESSONS* on go-arounds:

> I thought I might add a couple of things for you to discuss on your go-around procedure. One would be **the rate at which one adds power** and the second (more importantly) **adding right rudder** as the power goes in. Excellent topic as always!

This is almost (but not quite) universally true. Multiengine airplanes with counterrotating propellers and jets will require no significant change in rudder required with an increase in power, and airplanes with propellers that spin in the "opposite" direction (Gypsy engines on DeHavilland Tiger Moths come to mind) require more *left* rudder (something you'll rarely hear an instructor say). But for the vast majority of *FLYING LESSONS* readers powering up in a go-around indeed does require some additional right rudder, a lot in some cases. And the rate at which power is applied determines the rate at which rudder deflection must change, and by how much.

A good exercise might be to simulate go-arounds at altitude and watch the slip/skid ball to see if it remains centered through the transition from descent to climb. If the aircraft's manual recommends a rate of power application or places a limit on initial power application in a go-around then of course follow that guidance. Otherwise, add power in a go-around at the same rate you apply power on a normal takeoff. Great reminder, Chris, thank you.

See https://thomaspturner.com/flying-lessons-weekly/flying-lessons-for-february-27-2025/

Reader Jeff Shultz continues:

> I enjoyed the discussion of go-arounds, but have some input that I feel is chronically overlooked when teaching go-arounds. **We have to CONTROL THE AIRPLANE!** This seems like semantics, as we always have to control the airplane first and foremost, but not emphasizing this point misses a powerful instructional opportunity.
>
> During the go around the forces on the airplane are changing rapidly, and you have to condition yourself (thru effective training) to recognize a changing situation that requires **positive pilot control** to resolve. Key tasks related to positive aircraft control are missing from the traditional teaching syllabus.
>
> I teach a 4-step method for go arounds.
>
> 1. **Power** to Full (meaning, mixture rich, prop forward if needed, carb heat off, throttle to full at a rate the engine will accept).
> 2. **Control** the Airplane (meaning, rudder to stop the unwanted yaw from increasing p-factor and spiral slipstream, elevator forward pressure to counteract the gobs of up-trim set for the approach, and wings level. Essentially, I teach ***"point the nose in a safe direction with skillful application of flight controls"***).
> 3. **Fly away from the runway** (pitch to an appropriate climb attitude, Vx attitude below obstacles and normal climb once above). It always amazes me how many pilots get the power in and then fly at full-power skimming the runway eating up the remaining room before the trees.
> 4. **Housekeeping** (reconfigure the aircraft with flaps, gear, cowl flaps, check runway alignment and sidestep right, radio call, reassure passengers, pick up dropped items from the dash, etc).
>
> Primary training in worn-out trainers focusses (inappropriately) on reconfiguring the airplane as soon as possible to eke out max-performance to climb above obstacles. While not wrong, it's incomplete. **We need to emphasize positive aircraft control EARLY** so that we survive a go-around long enough to worry about the trees. Accident statistics are full of pilots losing control of powerful aircraft due to lack of positive control rather than failure to climb and collision with obstacles. **Primary trainers are so well behaved that "Step 2 - Control the Airplane" takes care of itself with little pilot input. This is a disservice to pilots once they transition to higher powered aircraft that will pitch up abruptly and roll over on their backs during a go-around.** We have to ***arm students from day-1*** to properly control the airplane and not worry so much about milking up the flaps.
>
> Great work on the newsletter!

What goes without saying often requires saying it again and again. Thank you, Jeff.

Reader, well-known instructor and Naval Aviator Tom Black takes up one step back to on scenario why a go-around might be needed in the first place:

> Tom, perhaps a final (!) comment on stabilized approaches triggered by how and **what to teach students so they recognize an unstable one**. The best way is to know what a stable approach looks like. There is something to be said for **the Navy procedure on final approach** of continually (and verbally) checking three items: **Alpha (or airspeed)**, **Lineup (left-right)** and **Ball** (the carrier optical landing system, giving precise flight path guidance). If you have watched Navy approaches, while there are continual corrections the approach down final tends to be very stable. **In [light airplanes] that becomes Airspeed** (or Alpha, if you have an AoA system), **Lineup** and **Flight Path *or* Glideslope** (particularly if optical guidance such as PAPI is available). I've been known to continually call out to myself on final, "Alpha, Lineup, Glideslope, Alpha, Lineup, Glideslope...". That also helps prevent fixation on any single item.

I'm a big proponent of callouts on final as well, aloud to myself since I rarely fly left seat in a two-pilot crew. I don't know if anyone will ever get the last word on stabilized approaches, Tom, but yours comes close. Thank you.

Reader and senior flight instructor Lew Gage writes about the airport traffic pattern from which good landings are made:

> Regarding your thoughts on flying an airport pattern I just want to add, I find that at Stead Airport, Reno, Nevada, and I imagine at other airports where student pilots are being trained, that **instructors are allowing or possibly teaching to fly patterns that are gigantic circuits of the airport** in C172s and other such airplanes. When I started flying (1961), the instructor (Larry Martin - CFI #17744) had me on day 2 doing landings that from any point in the pattern after reaching about 500 feet above the airport if the engine were to quit you could land back on the runway. And the rest of a normal circuit was that abeam the planned touchdown spot on downwind the throttle was pulled to idle and except for a quick "burping" the engine on base leg the throttle stayed at idle. I can assure you that in short order the student learned how to estimate how far the airplane would glide without using the engine to get to the runway. Those first lessons were in an Aeronca and my 1940 Taylorcraft airplanes. When I started instructing in April 1965 I required the students to learn the same disciplines that I had learned when I started flying.
>
> At Pan American World Airways (1966-1991) we did not get many chances to fly a regular visual downwind, base leg and final with no other traffic in the pattern. But I swear that those students that are now flying those 172 and Cherokee trainers are flying bigger patterns than I flew as visual downwind approach in a B707 or B747. A high percentage of those lightplane training flights are flying the downwind leg at least 1 mile and some closer to 2 miles from the runway. Certainly not with the student looking down at about a 30 degree angle at the runway but rather looking in the direction of the runway nearly level. **The poor guy that is flying a normal visual pattern has no idea where to look** when the student or his flight instructor calls on "downwind". Well, that is my rant for today but I hope some CFI reads it and thinks, "maybe that guy has some good information in there."

You always do, Lew. Thank you.

A student pilot in Ohio who is an avid reader but wishes to remain anonymous wraps up our Debrief this week with a comment and then a question:

> When I read your column I always have a pen ready to underline, comment, or question. **Anon please**. should you wish to use any of this. Still a student pilot.
>
> *Under Erratic Speed/Altitude* really hit home. When I came in for a landing, I became distracted. I didn't adjust for wind and was blown off course in the downwind. As I corrected it, I ended up in an extended downwind, then the base was off. **By the time I was on final, all I was doing was making corrections.** Not one thing was major in and of itself, but the cumulative result was. My CFI saw I was still trying to recover and land when he said GO AROUND.
>
> ***That was a valuable* LESSON.** If one thing goes wrong now, I don't mind. But **when two things go wrong, I go around.** It is still very difficult to make that go-around decision. I know it isn't a sign of failure, but culturally it is.

> ***Now I have a question re: Power Off Stall.*** I'm told it is a maneuver to train for a potential stall during landing. However I cannot find the AGL that a recovery from a power off stall is no longer possible. I fly a Piper Cherokee 140.
>
> I may be able to recover on the downwind and perhaps base. But **at what point on final is potential energy no longer sufficient for a nose down recovery?** And, why would I even be reaching the critical AOA in the pattern for landing? The only time I do hear the stall warning horn is on some landings as I flare, but I'm already down by then.

No one is perfect, even pilots(!). We're constantly making corrections. That said, mistakes can be cumulative. As you said, it ***shouldn't*** be considered a failure to go around, but instead a sign of superior decision-making. If you're not **in configuration** (landing flaps), **on speed**, **on glidepath** to the touchdown zone, **in alignment** with the runway and with **zero sideways drift** on short final, go around. The decision is made for you by comparison of your current state and trends to the desired flight path. If you prefer use Tom Black's shorter guidance, Airspeed-Lineup-Glidepath.

Regarding stalls: we practice stalls not to be able to recover from them very close to the ground, but so we glean a feel for control of the airplane at high angles of attack and are able to recognize when we're getting closer to a stall than desired. This recognition triggers the response to lower the angle of attack and add power (smoothly with rudder, like a go-around) to get further away from that undesired stall and restore good energy and flight path control.

We practice stalls in the landing configuration because that's usually the most critical for positive aircraft control if a stall occurs. We have to be able to fly out of a high angle of attack condition with a lot of drag (extended flaps) in case we find ourselves stalling on final approach, including wind shear and other external force encounters. It's also good "feel" for go-arounds, the topic of our recent *LESSONS*. But the FAA Private Pilot – Airplane Airman Certification Standards do not contain a completion requirement for the Power Off Stall maneuver (ACS page 42). In general in a light airplane like a Cherokee 140 you'll probably lose two hundred feet or more in the best-flown power off stall recovery. It might be more. From an unexpected stall, usually the result of distraction, it will be even greater; given the likely out-of-rudder-coordination condition of a surprise stall it may be even more yet. In other words, if you enter a full stall on final approach you have little chance of recovery. But if you have the ***feel*** for an impending stall and can make corrections before the stall occurs, then mastering the checkride maneuver has proven its worth.

Thank you, anonymous. I'm always gratified to hear when student pilots and flight instructors use my writing in the instructional process. Keep up the great work!

See https://www.faa.gov/sites/faa.gov/files/training_testing/testing/acs/private_airplane_acs_change_1.pdf

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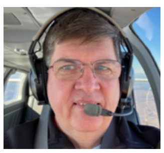

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