



FLYING LESSONS for April 18, 2018

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.**

FLYING LESSONS is an independent product of MASTERY FLIGHT TRAINING, INC. www.mastery-flight-training.com

Pursue *Mastery of Flight*™

Thank you for your patience with me for skipping a report last week while I worked at the Sun n Fun fly-in. Thanks also to the many readers who stopped by to say hello and let me know why you like FLYING LESSONS. This week I'm reporting a day early because I am giving a webinar during my usual Wednesday night publication time. I'll have more about this week's [webinar for flight instructors](#), and the pilots who fly with them, later in this week's report.

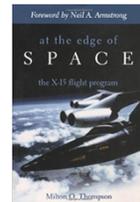
See https://www.faa.gov/SPANS/event_details.aspx?eid=82408

This week's LESSONS:

The engine had burned for 35 seconds and during that time the airplane had accelerated to Mach 2.2 in the climb. Jack [the pilot] peaked out at 78,400 feet altitude during the wingover turn back to Delamar. He made a nice approach pattern, but he was high on energy. Jack was an old Navy pilot like me, and we both carried an extra 5 knots of airspeed in the approach for each kid to ensure we did not stall the aircraft. Trouble was, Jack had eight kids.

He landed long and ran off the edge of the [dry] lake [bed] about 500 feet in the sagebrush before stopping. It did not hurt the airplane and Jack did not let it effect [sic] his ego. After the postflight debriefing, someone asked Jack how long the lakebed runway was. Jack's answer was, "Three miles with a 500-foot overrun."

Milton O. Thompson, [At the Edge of Space: The X-15 Flight Program](#)



See <https://www.amazon.com/At-Edge-Space-Flight-Program/dp/1588340783>

Touching down with precision, on a defined spot on the runway or landing surface, is an exercise in mastery and command of the aircraft. It's as much an art as it is science to have the aircraft meet the earth exactly where you want. It takes concentration and planning, experience and currency. It requires the pilot read the aircraft, and the weather, and make constant, subtle changes to react to changes brought on by the environment, the pilot's own actions, and perhaps most elusively, the pilot's *perception* of the need for those changes and how to respond.

Yet just when most pilots hone these skills to a sharp edge, we tend to let them fall into atrophy. In a world of mile- (or miles)-log runways, precision touchdowns seem to lose importance. Unless you're a bush pilot or practicing for an upcoming checkride, it's easy to believe it's just not all that important to consistently put the airplane down on a precise spot or even within a specific touchdown zone.

Meanwhile, like the X-15 pilots in the excerpt above, many pilots develop an enhanced fear of stalling the airplane on final approach. It's as if all that time practicing stall recognition and recovery in the process of earning pilot certificates is aimed at making us *afraid* of stalls, when the purpose is to make us *aware* of Angle of Attack, and how to use it for maximum performance and accuracy during takeoffs and landings.

Further, it's common and accepted practice to add some additional airspeed on final when approaching in gusty surface winds. The Industry Best Practice is to **add one-half of the gust factor**. This means to take the difference between the steady wind speed and the speed of maximum wind gusts, divide that difference by two, and add that value to your normal (i.e., no gusts) final approach speed.

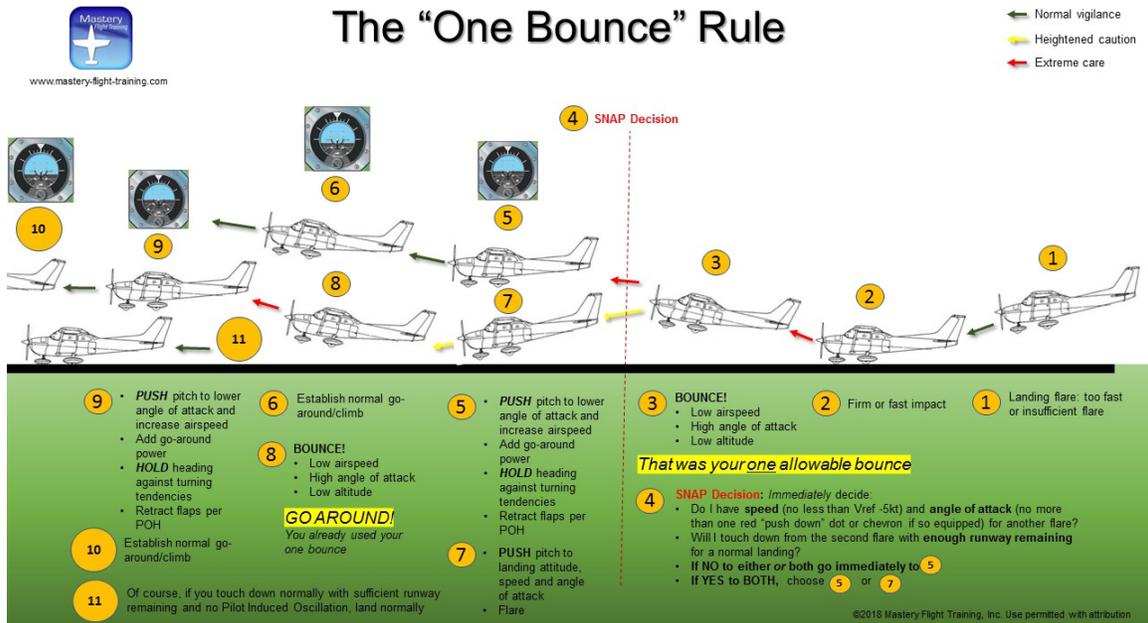
The result is usually not nearly as significant as you might think. For example, as I write this the reported wind at my home 'drome is 19G25. There is a six-knot difference between the steady wind speed (19 knots) and the maximum gust (25 knots). One-half of this gust factor is three knots, which I'll add to my final approach reference speed. **That's only three knots** to add to my 78-knot reference speed passing through 50 feet Above Ground Level.

Do you fly every final approach within a range of three knots?

Thinking in terms of the gust (25 knots!) and not the gust *factor* (only six knots) might inspire me to add a lot more to my final approach reference speed than the situation calls for.

So what happens when you add a few knots for the wife and kids, or because you overestimate the adjustment for a gusty surface wind, or simply because you no longer fly as precisely as you should...and that you *proved* you could, on at least one checkride flight when you were just **beginning** to be a pilot? **Two issues** are directly affected by the precision of your airspeed on final approach:

1. **Runway overrun.** Approach fast and you will likely land long. Land long and you may not have the runway length remaining to come to a stop (like that X-15 pilot). Runway overruns (going off the far end of the runway otherwise under control) are a common mishap scenario. A variation is the pilot who realizes his/her mistake and decides—too late—to add power and go around, only to (a) overrun the runway at full power, (b) collide with obstacles off the far end of the runway, or (c) stall the airplane in an overzealous attempt to pull up when outcome (a) or (b) appears imminent.
2. **Pilot-Induced Oscillation (PIO).** Approach fast and force the airplane onto the runway in an attempt to avoid landing long, and it's likely the airplane will bounce. From there, it will take skill and discipline to avoid entering a pilot-induced oscillation while you try to “catch up” with controlling the airplane. Remember my [“PIOs and the One Bounce Rule,”](#) including videos, from a *FLYING LESSONS Weekly* last February:

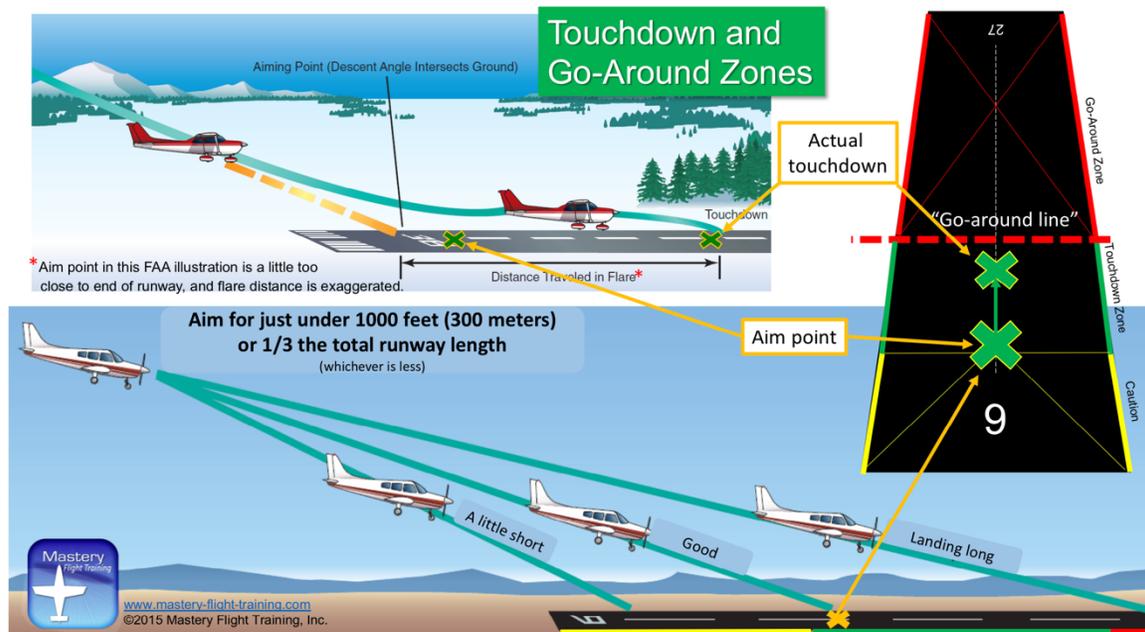


See:

<http://mastery-flight-training.com/20180208-flying-lessons.pdf>
www.mastery-flight-training.com/one-bounce-rule.pdf

As you come down final approach, consciously evaluate whether you are **on speed, in configuration** (flaps, landing gear as applicable), **on glidepath** to your identified touchdown zone, and **aligned** with the runway centerline. Crossing the threshold, or the last obstacle, or the beginning of the landing area (if it's not a purpose-built aircraft landing surface), if you are not correct in all four of these criteria then go around *immediately*. **Don't try to salvage the landing** if too fast (or too slow), out of landing configuration, above or below glidepath, or out of alignment with the runway.

Use an aim point to define a **Touchdown Zone**. If you'll land beyond the touchdown zone you are in [The Go-Around Zone](#). As the name implies, **go around without hesitation**.



See <http://mastery-flight-training.com/go-around-zone.pdf>

Landing an airplane precisely is an exercise in aircraft control. You may never need to get the maximum landing performance out of your aircraft...until you fly into a high density altitude airport, or have to make a precautionary landing at a short strip, or have to fit a crippled airplane into a farmer's field after engine failure or an inflight fire forces you to make an off-airport landing. If that time comes—it may never come, or it may happen today—you need to be able to be able to fly to the high level of precision you exhibited on your last checkride. **In an emergency there isn't time to practice on the way down.**

All aircraft performance targets are defined by an indicated airspeed (in the absence of military/jet-quality Angle of Attack indicators). Make it a matter of pride to **know and hit your airspeed targets** in all phases of flight. Not only will you hone your skills as master and commander of your aircraft, you'll also:

- get the maximum and most efficient performance all of the time;
- avoid the depressingly common runway overruns, delayed go-arounds and PIOs; and
- be as prepared as possible when **today is the day** you need to respond to an emergency.

Comments? Questions? Let us learn from you, at mastery.flight.training@cox.net



IFR Operations for Non-Towered Airports

Tips to easily manage your clearance and release
[Click here for video...](#)

See <https://www.pilotworkshop.com/nto-ifr?ad-tracking=turner-nto-ops>

Please help cover the costs of providing *FLYING LESSONS* through the secure [PayPal donations button at www.mastery-flight-training.com](#).

Or send a check to **Mastery Flight Training, Inc.** 247 Tiffany Street, Rose Hill, Kansas USA 67133.
Thank you, [generous supporters](#).

Debrief: Readers write about recent *FLYING LESSONS*:

I've got a *whole lot* of reader mail, which I'll get to next week.

Mastery Flight Training Webinar Wednesday, April 18 1900 U.S. Central Time (0000Z 19 April 2018)

"Stop Teaching About Safety"

Topic: *FLYING LESSONS Weekly* author Tom Turner presents information on how safety isn't a strategy, it is an outcome.

On Wednesday, April 18, 2018 at 19:00 Central Daylight Time (17:00 PDT, 18:00 MDT, 20:00 EDT, 14:00 HST, 16:00 AKDT, 17:00 Arizona, 00:00 GMT)

Select Number:

CE0382408

Description:

Everyone thinks they are a safe pilot. Yet pilots continue to crash airplanes, for the same reasons again and again and again. As instructors, we're not consistent in how we teach pilots to maximize their chances of an accident-free lifetime of flying. A shift in the way we teach safety concepts can make a huge difference in accident rates.

Safety isn't a strategy, it is an outcome. It is the result of developing and maintaining mastery and command of the airplane, the environment and yourself. This presentation goes far beyond telling pilots what not to do to avoid mishaps; it inspires **positive motivation** and provides **specific techniques and ideas** you can teach your students to use on every flight, so they can develop mastery and command for a lifetime of flying.

To view further details and registration information for this webinar, [click here](#). The sponsor for this seminar is: **FAASTeam**. The following credit(s) are available for the WINGS/AMT Programs: Advanced Knowledge 2 - 1 Credit. [Click here to view the WINGS help page](#)

Share safer skies. [Forward *FLYING LESSONS* to a friend](#)



Pursue Mastery of Flight.

Thomas P. Turner, M.S. Aviation Safety
Flight Instructor Hall of Fame 2015 Inductee
2010 National FAA Safety Team Representative of the Year
2008 FAA Central Region CFI of the Year
Three-time Master CFI

FLYING LESSONS is ©2018 Mastery Flight Training, Inc. For more information see www.mastery-flight-training.com, or contact mastery.flight.training@cox.net.