

Thomas P. Turner's Mastery of Flight™

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FLYING LESSONS for February 20, 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:

From the NTSB:

*The pilot rented the [Cessna 172] to gain proficiency flying from the right seat and asked the flight instructor to sit in the left seat. The pilot reported making control adjustments to recover from a low and slow approach to land. She attempted to go around, but utilizing muscle memory from flying from the left seat she inadvertently reduced throttle and pushed the yoke forward resulting in a hard landing. The flight instructor then took control, flew another pattern circuit and landed the airplane without further incident. **Probable Cause:** The pilot's improper landing flare and control inputs, which resulted in a hard landing. Contributing was the flight instructor's delayed remedial action. [ERA25LA031](#)*

*...the [Piper PA32-260] landed hard and bounced. [The pilot] attempted to recover by flaring the nose up to bleed off energy as a gust of wind blew the airplane to the left of runway centerline. The pilot stated that during the hard landing he hit his head on the glareshield and momentarily lost consciousness. When he regained consciousness, the airplane was flying towards the trees. The airplane collided with the trees and both wings separated from the fuselage. **Probable Cause:** The pilot's improper landing flare and hard landing. [CEN24LA322](#)*

*...the [Beech E55 Baron] experienced a hard landing after [the pilot] became distracted by air traffic control instructions. Following the initial hard landing, the pilot executed a go-around and then landed uneventfully. Postaccident examination of the airplane revealed the airplane sustained substantial damage to the fuselage. **Probable Cause:** The pilot's improper landing flare which resulted in a hard landing. [CEN24LA310](#)*

These are three of the 12 Final reports that arise from a search of "hard landing" in the NTSB database over the past year. All share a common factor: a known pilot distraction, in these cases one each from external factors, pilot incapacitation and pilot inexperience in the operation being flown.

See:

<https://data.nts.gov/carol-repgen/api/Aviation/ReportMain/GenerateNewestReport/195413/pdf>

<https://data.nts.gov/carol-repgen/api/Aviation/ReportMain/GenerateNewestReport/194974/pdf>

<https://data.nts.gov/carol-repgen/api/Aviation/ReportMain/GenerateNewestReport/194877/pdf>

[Here's another example](#) that has received extensive coverage this week, a very hard landing for reasons yet to be investigated.

See <https://www.cnn.com/shorts/cnn-shorts>

Hard landings are a frequent contributor to aircraft damage, often “totaling” airplanes. A hard landing is one in which the airplane impacts at a rate of descent greater than normal. Hard landings can (and do) cause:

- “Spreading” of spring-type landing gear, bouncing the airplane back into the air at a critically slow airspeed when the landing gear rebounds, with an even harder landing to follow.
- Blown tires, frequently followed by loss of directional control.
- Damage to the mounting of components and accessories in the airplane, especially heavy items with a long mounting arm such as starter motors, batteries, etc.
- Propeller strikes in airplanes with little prop clearance.
- Overstressing the landing gear itself, with possible short- and long-term chances of failure.
- In extreme cases, immediate and significant airframe damage.

What causes hard landings? Hard landings result when:

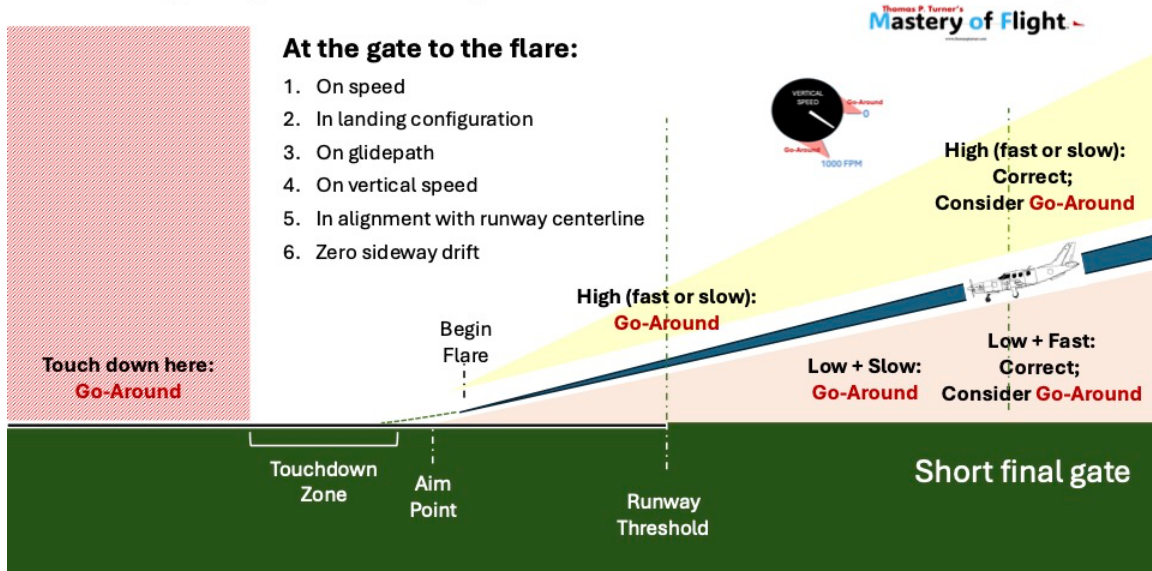
- The pilot flies **too fast** and does not slow to touchdown speed before impacting the runway. In many heavier, especially turbine designs, aerodynamics may make it preferable to “fly the airplane on” to the runway with power that assists the pilot in “rounding out” in a flare...but it still requires speed control. Use the procedure appropriate for the airplane you’re flying.
- The pilot flies at **too slow** an approach speed. Landing slow, at a high angle of attack, may provide insufficient control authority to overcome the sink rate. The airplane then continues at a high rate of descent to the ground.
- The pilot flares **too high**, slowing the airplane to or near stall speed at too high a height above the runway. The airplane then sinks or stalls onto the ground. This is common at night when runway lights project a false runway plane—it looks like the surface is defined by the lights, when in fact the height of the lights themselves makes this perceived surface a foot or so above the runway.
- The pilot is **too low** beginning a flare, not flaring enough or not flaring at all, and the airplane impacts at a high rate of descent.

See a hard landing developing? The [Airplane Flying Handbook](#) suggests this guidance:

- Power can be used to compensate for errors in judgment. Apply power to accelerate the airplane and increase lift to reduce the sink rate and prevent a stall. This should be done while still at a high enough altitude to reestablish the correct approach airspeed and attitude.
- If you are rounding out too high, hold the pitch attitude constant until the airplane decelerates enough to again begin descending. Then resume a normal round-out. This procedure should only be used when there is adequate [or excessive] airspeed.
- If too slow and too low, EXECUTE A GO-AROUND.
- GO AROUND any time the nose must be lowered significantly [to land] or that the landing is in any other way uncertain.

See www.faa.gov/sites/faa.gov/files/regulations_policies/handbooks_manuals/aviation/airplane_handbook/10_afh_ch9.pdf

Energy, Flight Path Management and Go-Around Decision Making



[Download this image](#)

Fly stabilized approaches. Unstabilized approaches, those where the airspeed, power and airplane configuration do not conform to established and nearly uniform SOPs for the final approach segment until the flare, commonly correlate to airport environment crashes. Know and use power, attitude and configuration targets to obtain expected performance and—at least as important—to recognize when a correction is needed, and when it's time to go around.

From a short final “gate,” generally 500 feet Height Above Touchdown (HAT) in light aircraft or as low as IFR minimums in an approach to minimums or near-minimums where a landing is possible, all of the way to touchdown, continually gauge your aircraft's **state** (position, speed) **and trend** (rate of change; converging with or diverging from the desired state).

Confirm that your aircraft is:

1. On speed
2. In landing configuration
3. On glidepath to the aim point
4. On vertical speed—a trend to remain on glidepath, or gradually correct to glidepath if needed
5. In alignment with the runway centerline
6. With no slideslip that could lead to a loss of control upon landing

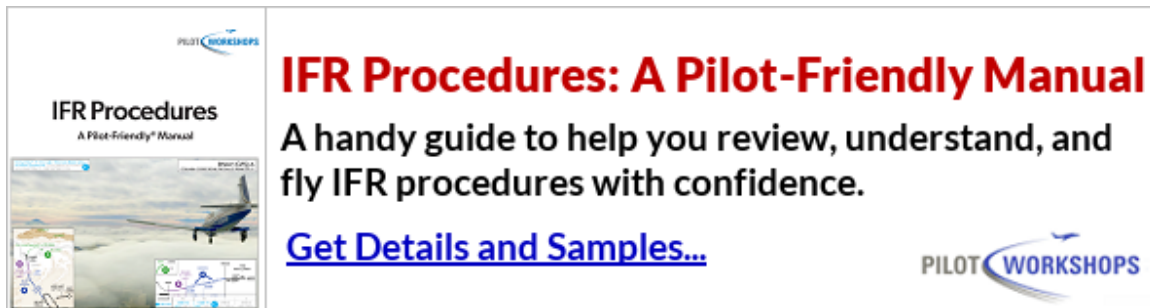
See <https://thomaspturner.com/wp-content/uploads/2025/02/Energy-flight-path-management-and-go-around-decision-making.jpg>

In addition to infusing professional-level performance into your flying, consciously evaluating your performance and comparing it to expectations will help you detect inaccuracies that may be the result of distraction. In other words, **focusing on your performance adds focus to your performance.**

If the state and trend do not **assure** you'll arrive over the aim point with the ability to flare and touch down under control in the touchdown zone (and not beyond it), **go around.** Don't wait to decide, don't try to salvage the approach. Go around.

Smoothly and accurately landing, managing distractions, and knowing when it's time to go around before going around (or failing to do so) becomes critical, reminds me of a simplified definition of **airmanship**: making the airplane do what you intend it to do, and go where you command it to go.

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



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Debrief

Readers write about previous *LESSONS*

Reader “Captain Bob” writes about our ongoing discussion about see and avoid prompted by the midair collision at Washington DC:

Regarding [this week's](#) and [last week's](#) *FLYING LESSONS*, it appears to me you are neglecting to point out the obvious. **No pilot is ever OBLIGATED to report traffic in sight.**

As you correctly point out, current *policy* states the responsibility to maintain visual separation falls on the pilot who reports traffic in sight and it also relieves ATC from any further obligation to do so. However, regardless of what that helo pilot was looking *at*, **when a pilot deliberately, willfully, intentionally and cheerfully refuses to report traffic in sight, ATC is NOT relieved of their obligation to resolve the CONFLICT ALERT (red CA).**

Bob followed the passage I quote with his detailed opinion on the specific collision, but again I’m trying to focus on the larger topic of traffic avoidance and let investigators do their work. Bob’s comments above are spot on, however, and I did address them (albeit not as directly) in last week’s Debrief when I wrote:

If a controller gives you a traffic advisory and you do **not** see and positively identify the other aircraft, **do not report it in sight. Trust** the controller to continue to ensure traffic separation and happily accept any deviating vectors or altitude changes the controller assigns.

and

...pilots will still have to look out the window, visually acquire and maneuver around other aircraft for the tactical close-in solution to larger strategic direction...unless we want to accept a larger “bubble” of protected airspace....

For readers flying under U.S. rules [14 CFR 91.113\(b\)](#) states:

When weather conditions permit, regardless of whether an operation is conducted under instrument flight rules or visual flight rules, vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft.

But the reader is correct: **Although pilots are ultimately responsible for collision avoidance in visual conditions, they are not required to relieve controller of their responsibility to provide separation between participating aircraft** if they are willing to deviate if the controller directs. Thanks, Bob.

See:

<https://thomaspturner.com/flying-lessons-weekly/flying-lessons-for-february-13-2025/>

<https://thomaspturner.com/flying-lessons-weekly/flying-lessons-for-february-6-2025/>

<https://www.ecfr.gov/current/title-14/chapter-I/subchapter-F/part-91#91.113>

Reader William Mills adds:

Hi Tom, have been getting a lot from your *FLYING LESSONS* emails, thanks.

I wanted to mention one point about using ADS-B In TIS-B traffic indications for avoidance purposes. I've noticed that **there's a lag between the traffic symbol and where the actual flying machine is at any time**, sometimes pretty significantly. While it's a great tool for helping to find another aircraft, one must remember that **it's over in that general area, not necessarily at the precise location** shown on the display.

I've noticed that as well. I've also seen that at some angles traffic displayed on ADS-B or older-school traffic displays will disappear when close in. Cockpit traffic displays make visual acquisition easier by advising when another aircraft is "over there," but they may not depict *everything* that's out there or precisely where it is...it's **automation that assists, but does not replace**, the human eye. Thank you, William.

Reader, pilot and engineer (and high school band mate) Paul Siegmund continues:

Another excellent string of newsletters following a horrifying tragedy, Tom. Thanks!

Some of the commentary here and coverage elsewhere took me back to a minor, and fortunately only hilarious, incident over Honolulu in 1979 while I was close to finishing my airplane rating. It relates here to **terminology, mutual understanding, unusual operating situations, and traffic identification**.

I was returning to PHNL after a solo cross-country lap around Maui on an August afternoon. Hawaii was in a mild doldrum with winds from the southwest, somewhat unusual, and which had the airport running in a reverse configuration. I am no longer positive but I think ATC might been preparing to flip directions and would have been turning slow children like me (in a Cessna 152) using local landmarks and not the usual named VFR arrival routes. Permissible deviations from normal can stack up, but I was young and clueless. And of course practices have changed since the '70s.

I was expecting, as I checked in with approach out over the water before reaching the Koko Head VOR (the east point of the island), to be told to maintain 1500 [feet], remain to the right of the freeway (there was only one then) and descend at my discretion to make a left 45 and land on runway 22L. It would be several miles (minutes in a 152) before switching to tower. There was some light-twin air tour traffic around me, which usually took a longer route to another runway for easier taxiing. "Traffic is at one o'clock, three miles." "Traffic in sight." I had the flick.

Instead, the controller told me to "maintain 1500 and follow the beach." Huh. Awesome! I'm almost 17, flying solo, and I'm going to track right over Waikiki Beach. Not normal, but he asked and I was able. I had that flick, too. Noooooo problem, girls. I made a gentle left turn toward Diamond Head then a right to follow the beach precisely. I was happy, but a little surprised when a couple of Air National Guard Phantoms passed to my left, reciprocal, [heading] a little close but not alarmingly so. Of course they were on UHF and I couldn't hear them. I was abeam the Sheraton [Hotel] complex about halfway down the beach, when Approach called me, as expected, as it's about time to switch to Tower. But he was losing his mind...agitated, shouting that I was two miles left of my clearance, endangering other traffic, and to "turn right 360 immediately to return to the freeway arrival. You told me that you had the Queen Air in sight and would follow it!"

Hang on. Teenager in trouble with authority, but...

"Um, sir, I don't know what a Queen Air is. Sounds like Beechcraft name, though. I thought I saw a DeHavilland Dove, then you said to follow the beach. Do I need to phone someone?" Long pause. "Tower now, 118.1, expect 22L. No phone call needed." Now I look back with gratitude that all was well that day. But **we can't rely on luck**.


No, we can't. I left to the mainland for college before hearing that story! Mahalo, Paul.

New Zealander reader Pieter van Ammers concludes our see-and-avoid discussion this week:

This is an amazing *LESSON*, and please accept an enormous thank you. No one teaches this sort of stuff over here, certainly not in the routine flight schools. I'd be much the poorer without the insights you provide us all.

I'm not certain a lot of this is taught in flight schools up here either, Pieter, as supported by the experiences readers relate. That's why I've spent so much time on it, to fill instructional gaps and add some postgraduate work for pilots...and for myself as I research *LESSONS* and learn from readers' comments. Thank you, Pieter and everyone.



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NEW THIS WEEK: Daniel Sniezek, Victor Toce



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