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FLYING LESSONS for April 9, 2026

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

The NTSB has published its [Final Report on the crash of a Honda Jet] in Orlando, Florida about two years ago. From the report:

> About 1 hour and 22 minutes before landing [on a Part 135 on-demand charter flight], the flight crew reviewed the destination airport automated terminal information service (ATIS), which indicated the wind was from 270° at 14 kts, gusting to 24 kts.
>
> The cockpit voice recorder (CVR) recorded the crew discussing the crosswind component of the winds reported on the ATIS, the aircraft operating limitations, company procedures, and an alternate airport, but the pilot flying (PF) elected to continue to the planned destination airport.
>
> About 16 minutes before the airplane touched down, when it was about 39 nautical miles (nm) from the destination airport, the PF advised the pilot monitoring (PM) that he checked the airport's automated surface observing system (ASOS) and reported the wind velocity was currently at 270° at 13-14 kts. While on final approach, about 1.2 nm from the approach end of runway 36L, the tower controller advised that the wind was from 290° at 19 kts, gusting to 24 kts. The PF continued the approach and just about when the airplane was at touchdown the controller broadcast on the frequency for another airplane that was on approach that the wind was from 290° at 20 knots, gusting to 24 kts.
>
> After the airplane touched down, it began drifting to the left side of the runway. The PF applied left aileron control input, deployed the speedbrake, and applied right rudder; however, the airplane departed the runway and impacted a frangible runway distance-remaining sign. The PF then corrected the airplane to the right, returned it to the runway, and taxied off onto a taxiway, where the pilot stopped the airplane and evacuated. Postaccident inspection of the airplane revealed substantial damage to the left wing's forward spar in the area that impacted the sign. The rudder and aileron trims were found in the neutral position. The operator reported there was no preimpact mechanical failure or malfunction with the airplane that would have caused the runway excursion.
>
> Although the PF reported about 16 minutes before touchdown that he received the ASOS observations for the previous 20 minutes and stated to the PM that the crosswind was at 13 or 14 kts, with the wind from 270° at 13 kts, a review of the 14 previous 5-minute ASOS observations revealed that gusts were reported in all but 2 of the 14 observations. The PF's reference specifically to the wind being from 270° at 13 kts corresponded to an observation that also reported gusts to 24 kts, which occurred about 23 minutes before the airplane touched down. That gust value exceeded the airplane's published crosswind limitation of 20 kts.
>
> The gust values at the destination airport consistently exceeded the airplane's published crosswind limitation for the majority of the 5-minute ASOS observations in 1 hour 23 minutes preceding the accident. These conditions should have necessitated either an earlier diversion to an alternate airport

> that was more aligned with the wind or a go-around during short final approach after the flight crew was informed, when the airplane was about 1.2 nm from the runway threshold, that the wind was gusting above the published crosswind limitation. The PF chose to continue with the landing and, due to a crosswind gust, failed to maintain directional control of the airplane after landing. The PF also did not incorporate the gust values into the crosswind calculations about 16 minutes before the accident, which likely influenced his decision to continue the approach.
>
> **Probable Cause and Findings**
> The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of the pilot flying to maintain directional control after touchdown with wind gusts that exceeded the airplane's crosswind limitation. Contributing to the accident were the flightcrew's continued approach to the runway despite the consistent wind gust crosswind component that exceeded the airplane's published crosswind limitation, and their incorrect wind gust crosswind calculation in flight.

See https://thomaspturner.com/wp-content/uploads/2026/04/2024.0424-Honda-Jet-FL.pdf

A manufacturer's maximum demonstrated crosswind component is not a limitation, even in Part 135 jet airplane operations. The maximum demonstrated crosswind component (call it **XW$_{MAX}$**) is ***not*** a measure of the crosswind component in which rudder and/or aileron must be at maximum deflection in order to maintain runway alignment—that figure, if it were to be known, would vary with the indicated airspeed of the airplane because control effectiveness changes with airflow over the control surfaces.

An actual limiting airspeed, if one were to be derived, would be higher at aircraft touchdown and get progressively slower as the airplane decelerates. It would also depend on whether the nosewheel (or tailwheel) is in contact with the surface, and how much contact exists between the tire(s) and the runway surface. The quality of the runway surface would determine the surface drag coefficient and alter the absolute speed at which XW$_{MAX}$ applies. It would be very difficult to consider this all in real time to make airframe absolute limitation-based no/no-go decisions.

Bold Method explains:

> The maximum demonstrated crosswind is derived during manufacturer flight testing for aircraft certification, where a test pilot must maintain control during takeoffs and landings in 90-degree crosswinds. It must be at least 20% of the stall speed in landing configuration (V_{so}), but is often higher based on actual tested conditions.

See https://www.boldmethod.com/learn-to-fly/maneuvers/how-maximum-demonstrated-crosswind-is-calculated-ga-aircraft/#:~:text=The%20maximum%20demonstrated%20crosswind%20is%20a%20requirement,of%20the%20power%2Doff%20landing%20configuration%20stalling%20speed.

Skybrary adds (my emphasis added in italics):

> **Key Aspects of Deriving Maximum Demonstrated Crosswind:**
>
> - **Certification Requirement:** Under FAA regulations (e.g., Part 23), manufacturers must demonstrate that ***the aircraft can be safely controlled in a 90-degree crosswind***.
> - **Minimum Threshold:** The test must prove control in a crosswind of **at least 0.2×V_{so}**(20% of stalling speed in landing configuration).
> - **Flight Testing:** Test pilots perform takeoffs and landings to find ***the maximum crosswind velocity where the aircraft can be managed*** **without *"exceptional piloting skill"*.**
> - **Not a Structural Limit:** Unlike maximum takeoff weight or structural speed limits, the maximum demonstrated crosswind (found in the Pilot Operating Handbook) is ***not a hard legal limit***, but rather a "demonstrated" figure, indicating ***the highest crosswind value encountered during testing***.

- **Control Authority:** The limit is ***largely determined by the effectiveness of the rudder and ailerons, along with rudder authority at the moment of touchdown***.
- **Documentation:** For aircraft certified after May 3, 1962, ***this value must be documented***, often shown as a knot value (e.g., 15 knots for a Cessna 172).

Note: The demonstrated crosswind ***generally applies to dry, clean runways***.

See https://skybrary.aero/sites/default/files/bookshelf/871.pdf

All this is to say that XW_{MAX} is not overly optimistic, but it's not pessimistic or requiring super-test pilot skill either. Largely it's a matter of the pilot's abilities, at least until the crosswind component becomes exceptionally high.

Complicating a pilot's decision making, as winds gust the direction from which that wind flows relative to the ground changes as well—***from 10 to as much as 45 degrees in heading change***, according to the U.S. National Weather Service. The roughness of the terrain, the NWS states, significantly affects the angle of the gust, with **higher [surface] friction leading to greater deviation in direction.**

See https://www.weather.gov/source/zhu/ZHU_Training_Page/winds/Wx_Terms/Flight_Environment.htm

What the Pilot Flying (PF) might have felt was within his ability to control in the light jet may have been a worse condition than that PF anticipated because the gusts could have translated into a greater crosswind or even a tailwind component that is sometimes even harder to control.

What's this mean to you, often the pilot of a smaller, lighter airplane with an even lower XW_{MAX} than the Honda Jet? You may have more, or less, control authority than jet pilots at runway speeds. Your ability to compensate for crosswinds changes as airspeed changes. Authority moves from low to higher as an airplane accelerates during takeoff, and from high to low as the aircraft decelerates during landing. That's probably why most Loss of Directional Control on the Runway (LODC-R) mishaps occur at the *beginning* of a takeoff roll or the *end* of a landing roll. That, and again, **the control input required to maintain directional control on the runway will change, sometimes dramatically, during gusts**.

One other point: As I've mentioned several times in *FLYING LESSONS*, **the typical computed crosswind component in most LODC-R events is *less than 10 knots***. Of course, ***many LODC-R events have nothing to do with the wind***. They're the result of attempting to land too fast, or a hard landing usually from attempting to land too slow; or other mechanical failures of the landing gear, rejected takeoffs (RTOs) gone wrong, errors during simulated single-engine landings in multiengine airplanes, distraction, or any number of other possibilities having nothing to do with the effect of wind on runway directional control.

In cases where wind *is* a factor, however, my intuition is that when crosswinds are higher pilots think more about it. They apply crosswind controls and are more likely to divert to another runway when the crosswind component is high. When crosswinds are low it doesn't matter much whether the pilot applies crosswind controls. But when the crosswind component is in the six to 10 knot range pilots may not take it seriously enough to apply proper crosswind controls. It's important to actively manage *every* takeoff and landing with crosswind controls, so it's instinctive do apply them whenever it would make a difference.

As we enter "gust season" with the change from winter to spring (or fall to winter in the southern hemisphere), be thinking about crosswind control inputs, the change in wind direction as well as intensity during gusts, and seriously considering the possibility of diversion **in *any* wind** so crosswind compensation is natural at all speeds—independent of any XW_{MAX}.

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

Debrief

Readers write about recent *LESSONS*:

Frequent Debriefer Mark Sletten writes about last week's *LESSONS*:

> Good newsletter, Tom. Regarding teaching pilots to pull the chute, I heard a story about a Naval Aviator who had to punch out during a botched catapult launch. This was a seasoned pilot boasting a couple of decades experience with carrier ops. Apparently, the catapult had been set improperly, and the aircraft did not attain flying speed. The pilot ejected safely and was fished out of the water by rescue personnel. After everything settled down the squadron leadership asked the pilot to work up a briefing for the rest of the pilots. During Q & A following his presentation a relatively junior pilot asked if the incident pilot could pinpoint when exactly he made the decision to punch out. ***"About 20 years ago, during pilot training."***

"We don't rise to the level of our expectations, we fall to the level of our training."

— Archilochus, iambic (lyric) poet, i.e., historian, c. 650 BC

Thanks, Mark.

See https://thomaspturner.com/flying-lessons-weekly/flying-lessons-for-april-2-2026/

More from last week's report, Australian (although he could be anywhere) reader Tony Lavan asks a legitimate question:

> What sort of an ATC response is "Are you declaring an emergency?' when the guy has just told you he's just suffered an engine failure?

True, the trend in U.S. Air Traffic Control is to **declare the emergency *for* the pilot**, and it may seem odd to ask a pilot if a reported engine failure is in fact an emergency. Asking like this is a little "old school" but is probably accurately following ATC checklists in just such a case when the pilot has not (yet) him/herself declared. I do see this prompt from the controller as having benefit, however. As I've written several times before, the act of declaring an emergency may have the effect of convincing a pilot that all attention needs to turn to getting safely on the ground as soon as possible, and sacrificing the aircraft if necessary (and in the case of the Cirrus in question, deploying the parachute when called for) to maximize the chances of a good outcome for the aircraft occupants. Passive/aggressively advising the pilot to get into **the "emergency mindset"** may seem odd but overall, I think, is a very good thing. Thank you, Tony.

More to say? Let us learn from you, at **mastery.flight.training@cox.net.**

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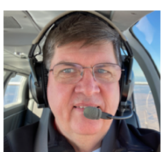

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