Thomas P. Turner's
Mastery of Flight

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FLYING LESSONS for February 22, 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:

Personal events carved away much of my **Mastery of Flight** research and writing time this week, so with my apologies let's go directly to your insights in the Debrief.

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

Debrief: Readers write about recent *FLYING LESSONS:*

Reader/instructor Mike Radomsky, whom I referred to last week in discussing my experience flying his Cirrus SR22 simulator, continues last week's *LESSONS* prompted by the fatal crash of a Sling trainer:

> Thank you for another really interesting edition of *FLYING LESSONS*. The Sling accident is of great interest to me because of all the parallels with the COPA/Cirrus community, as you noted. Your comments are all spot-on. I would add that, within the Cirrus community, we experienced **an initial reluctance by pilots to actually deploy CAPS**. We believe that a high percentage of the initial fatal accidents might have had a much better outcome if only the pilot had pulled the handle.
>
> Readers may be aware that the **introduction of ejection seats into military aircraft had a similar story**. Initially, pilots were reluctant to use them, especially if they believed that they had caused the problem. If they believed that the airplane itself had failed, they were more likely to eject.
>
> Whatever the case, we have (with decent success) encouraged our pilots to accept that the CAPS handle merely transfers ownership of the airplane to the insurance company. That said, ***most pilots***

don't know how they would actually react when things go wrong. If that sounds like a plug for doing Emergency Procedures training in a sim, it is. It really helps a lot.

There is one particular difference between Cirrus CAPS and the Magnum installation in the Sling TSi. ***As far as I know, a minimum altitude for effective deployment of the parachute in the Sling has not been published.*** Sling did perform an intentional deployment of serial number 3 in 2010, but I'm unable to find any reference to the altitude lost before the airplane reached stable descent at terminal velocity. Perhaps one of your readers can enlighten me.

For the Cirrus, we have a Cdh (CAPS Decision Height) of either 500' or 600' AGL, depending on the model. Knowing this number is very useful to a pilot in many emergent situations - for instance, an attempt may be made to land dead-stick at an airport, but **if by 5/600' the landing is not assured, PULL.**

Magnum does publish a max deployment speed for the 601 SP model used in the Sling—199 mph, which is faster than the cruise speed for the Sling TSI—but not a decision height for deployment - that would depend on many factors, including deployment speed, area of the parachute and weight of the airplane.

If I were the pilot of a parachute-equipped Sling, I'd do my best to either find a definitive Pdh (Parachute Decision Height), or take my best guess, then practice using that information to **develop the appropriate muscle memory in a sim**.

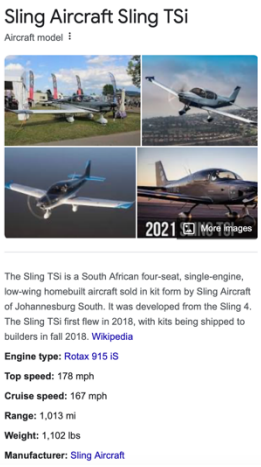
Finally, this: In many situations, using a parachute requires the pilot to actually know his/her height AGL. Many navigators provide GAGL (GPS AGL); so does ForeFlight. It's a number worth having handy in flight.

Thanks for your learned insights into ballistic parachute operation and decision-making, Mike. Flying your sim was an amazing experience. An important note: knowing your approximate height above ground level (AGL) is important in aircraft *not* equipped with whole-airplane parachutes as well. **If you find yourself in an engine-out glide you need to know your height AGL so you can determine how much maneuvering you can do and still make it to your chosen landing spot.** Mike continues:

> One other "twist" that **having a parachute (and a known Pdh) provides is the ability to have a no-hazard (or at least, minimal hazard) Impossible Turn option** in an EFATO [Engine Failure After Take-Off] situation. Consider that the pilot may be able to ***initiate*** the maneuver and ***defer the decision on whether to continue*** until reaching Pdh. Runway made above? Land. Not going to make it (or in doubt)? Deploy [the parachute].

Thanks again, Mike.

See:
https://www.cirruspilots.org/Publications/Articles/a-bonanza-pilot-flies-the-cirrus-sim
https://thomaspturner.com/flying-lessons-weekly/flying-lessons-weekly-7/



Frequent Debriefer Mark Sletten delves deeper into the details of the Sling TSi crash that was the basis for last week's *LESSONS*:

Regarding the Sling TSi crash, it would be instructive to know the answers to a couple of questions:

1. Does recovery chute deployment result in a totaled aircraft?
2. Did the pilot build this plane?

To your first question: The intent of a ballistic parachute, combined with design of aircraft landing gear, seats and other structures, is similar to the design goal of modern automobiles: sacrifice the vehicle as needed to reduce impact forces on the occupants. The rocket-propelled deployment system itself imparts significant airframe damage, as do the rip-away sections of the fuselage, wing and tail that contain the parachute risers.

The Cirrus record suggests, however, that the airplane may be rebuildable (with great effort and at great expense) and at least a few times this has been done and the airplane has flown again. I don't know about the Sling TSi; I suspect there's a high likelihood the aircraft will be totaled following a parachute deployment, because that's the parachute design philosophy. But the Sling *may* be rebuildable, depending on circumstances and the owner's willingness to pay.

Regarding your second question, the airplane's registration lists a person's name that appears to be male as the "manufacturer name" of the Experimental Amateur-Built airplane (E-AB) aircraft. A news report indicates the student was female and the instructor male. Since Federal Air Regulations prohibit commercial use of an E-AB the female student must have been the airplane's owner or co-owner (and not the builder). The male instructor may have been the builder; I could not find his name in any news accounts. Assuming the operation was in accordance with regulations, I can't determine if the builder was on board. Of course, readers familiar with those aboard the aircraft may be able to tell us more if they feel it's pertinent to what we can learn from this tragedy.

See:
https://slingaircraft.com/aircraft/sling-tsi/
https://registry.faa.gov/AircraftInquiry/Search/NNumberResult?nNumberTxt=135WT
https://news.yahoo.com/small-plane-crashes-soccer-field-202350298.html?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAAIsVY9LQ4Gu2Z-elNeaDMgsthI0rycUeSw-5Y99yhwCnT9YzAw6XLHVWQmSsqsHA1nBhEKCVoQFWqE6zOP5nqw93LX5o75ZTOlQh_WK2d7NxTqUgwDSRwEpOv0MMpAjpCVwQh4YrhpH9VaJu80Y7VFAvyWBO342Y8vmX8QIuJsa9

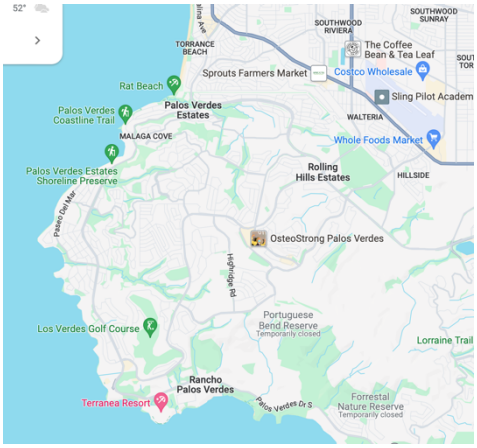
Reader Sletten continues:

> **One thing I've noticed about the Experimental aircraft community is a much more powerful motivation to save the aircraft when it's flown by the original builder**, almost certainly due to the owner's sweat equity and personal pride in the accomplishment of building an aircraft. There have been several fatal accidents in the Lancair community related to this issue. One involved a Lancair Legacy owner who experienced an engine failure on his flight home from Oshkosh. He overflew an airport with a short, albeit viable runway in an attempt to get to another with a much longer runway. By the time he realized he couldn't make it to the second airport he had gone too far to get back to the first. The subsequent crash landing in the median of a divided road killed him and completely destroyed the aircraft.
>
> My mantra is that ***if anything ever goes wrong in-flight requiring an emergency landing my priority will be me and my passenger*, because at that point the plane already belongs to the insurance company.**

And that was last week's *LESSON*: **Sacrifice the airplane in order to protect its occupants, and think about the scenarios beforehand so you've already made most of the hard decisions should an emergency occur.** Thank you, Mark.

Reader Jim Piper gives us a local geography *LESSON*:

> I'm not sure how familiar you or the pilot who posed the questions concerning the Sling accident are with the [Torrance, California] KTOA area. Most "air work" out of KTOA is conducted over the Pacific Ocean (Catalina channel) offshore from the Palos Verdes Peninsula. Most of that shoreline consists of steep cliffs dropping directly into the ocean or at best, to rocky very narrow beaches. My point is that to those unfamiliar with the area it seems like a no-brainer to just land on the beach! But for all practical purposes there really is no beach, just rocks, boulders and water. A parachute landing attempted for the narrow beach and fouled by contact with the high cliff edge and face has



> potentially disastrous results! The options were not as clear cut as they may have seemed to the author of the question.

The reader in question specifically suggested deploying the ballistic parachute **"over or around the Pacific coast"** and specifically "**I'd like to think I would've deployed the parachute as close as safely possible to the shore**," which presumably takes the coastal geography into account. Your point is quite valid, however: even with an all-airplane parachute system a pilot needs to take the nature of the likely touchdown spot into account, if an option to delay deployment for optimal conditions exists. Thank you, Jim.

Reader and expanded-envelope training advocate Ed Wischmeyer wraps it up this week:

> Regarding the tragic Sling accident near San Pedro: This video [which is no longer available online] strongly suggests that the significant part of the flight path might have been **a descending spiral and not a stall/spin**. And if the final accident mechanism was indeed a stall/spin, it seems clear that the stall/spin was a last gasp recovery effort and consequential, not causal.
>
> In that sense, this event might have an accident progression similar to the buzzing / steep turn / descending steep turn / too late recovery attempt stall/spin video that you saw at the NAFI Summit.
>
> Two takeaways for flight safety: first is to **train pilots in descending spirals and recovery**. This event might have had ingredients very similar to a base to final accident. Second is that **this accident may confirm other accidents in which the term stall/spin was used generally and not specifically**.

I've written about a stable airplane's tendency to enter a spiral, the difference between spirals and spins, and spiral recovery techniques many, many times including this article. Spiral recognition and recovery is not evaluated by the U.S. Airman Certification Standards (ACS). Although ethically or at least aspirationally instructors should train applicants to proficiency and mastery, the reality is that time and money mean that candidates are usually trained to the completion standards of ACS-required tasks and little to no more. That's why, for instance, very experienced pilots I teach usually consider the spiral entry, recognition and recovery I include in every transition and first-experience-with-me flight to be one of the "a-ha" moments when I ask during post-flight debriefing. You're correct on both counts, Ed: we need to better train pilots for this oft-misunderstood aircraft tendency; and we appear to mis-label many loss of control—in flight (LOC-I) crashes as "stall/spin" when the mechanism is completely different. Thanks, Ed.

See:
https://www.foxla.com/news/small-plane-crashes-on-san-pedro-soccer-field-2-injured [no longer available online]
https://youtube.com/shorts/wGFLG9SeV74
https://www.aviationsafetymagazine.com/features/avoiding-airframe-failure/

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