



FLYING LESSONS for September 16, 2021

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 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:

Back in 2015 I was one among many industry representatives serving as part of the National Transportation Safety Board (NTSB) forum [Humans and Hardware: Preventing Inflight Loss of Control in General Aviation](#). Speaking in [the Pilot Training Solutions segment](#), I spoke about the value of type-specific transition training and the role of aircraft type clubs—groups of owners of a particular type of aircraft who share information about flying and maintaining them. [My 10-minute presentation](#) (beginning at just before 11 minutes into the segment) reviews some very interesting data on loss of primary

instrument information, the challenges of integrating of angle of attack indicators into flight operations and instruction, and missed approach decision-making. The entire day’s presentations are [available on YouTube](#).

See:

<https://public-inspection.federalregister.gov/2015-24143.pdf?1442925967>

<https://www.youtube.com/watch?v=BCQF3fvxAfg&list=PL5aVmmm4Qt9Et0rBM7CwXdX5C9o2jxudh&index=5>

<https://www.youtube.com/playlist?list=PL5aVmmm4Qt9Et0rBM7CwXdX5C9o2jxudh>

Seated next to me on the panel and preceding my presentation was [Rich Stowell](#). Rich is well known in loss of control training, one of the leading experts on stalls and spins and often called the “spin doctor.” In his presentation to the NTSB Rich, one of the early proponents and practitioners of [Emergency Maneuvers Training](#), announced he was developing what he calls the **Learn to Turn** program to emphasize rudder coordination and attitude control...the basis of all loss of control prevention.

See:

<https://www.richstowell.com>

<https://www.richstowell.com/services/emt@-program>

Last week Rich delivered his **Learn to Turn** course in webinar form. Rich’s [Aviation Learning Center](#) includes an overview and 98-page booklet, a 2 ½ minute introduction to **Learn to Turn**, a 12-minute video and a [YouTube recording of the September 8 webinar](#).

See:

<https://www.richstowell.com/learn-to-turn/>

<https://www.youtube.com/watch?v=CRhol5LCvdM>

I plan to watch **Learn to Turn** and review the booklet this week. I encourage you to do so as well, and *let us know what you think* about Rich's program reducing the rate of inflight loss of control.

Suggestions? Questions? Let us know at mastery.flight.training@cox.net.



See <https://pilotworkshop.com>

Debrief:

Readers write about recent *FLYING LESSONS*:

Reader Jamie MacDougall writes about [last week's LESSONS](#) from my experience with failure of a voltage regulator:

Your failing VR reminded me of my own issue with a voltage regulator that caused me a lot of headaches. I don't know if you caught the thread on BeechTalk so [here's the link](#).

Since you may not be a participant in the BeechTalk forum, Jamie's experience was quite baffling and included seemingly conflicting indications, and was eventually cleared only a major avionics update was complete.

I replied: Quite the experience!

Years ago at [ABS](#) I was working with the [National Institute for Aviation Research](#) (NIAR) at Wichita State University on airplane longevity issues. One thing that stuck with me is that their research on aging airplanes showed that, while most fatigue issues are the result of time in service and the operating conditions, that **aircraft electrical components and especially wiring deteriorates with calendar age regardless of how often it is actually used**. I suspect a lot of elusive airplane squawks can be traced to simple old wiring. Thank you, Jamie, and thank you for your donation to the costs of hosting and delivering *FLYING LESSONS Weekly*.

See:

<https://www.mastery-flight-training.com/20210909-flying-lessons.pdf>

<https://www.beechtalk.com/forums/viewtopic.php?f=37&t=174859>

www.bonanza.org

<https://www.wichita.edu/research/NIAR/>

Reader Jeff Dill continues the conversation:

Vintage aircraft usually had just a needle to indicated the state of charge, no light to alert. While simple and reliable, they depend on active monitoring, and I have seen some that don't center up exactly when unpowered. So **I'm sharing a couple of stories as a heads up that your battery may not be charging**. Even if this advanced notice provides only enough time for one radio call, it could make a huge difference.

One rental that I took into the air had a charge needle that rested on the plus side of center even though the load wire had broken free from the alternator. For that, and another generator failure story, **my first indication of trouble was a crackling in the radio**.

On another occasion, my alternator was failing slowly over several months. As time went on, it took a higher and higher rpm to indicate a charge, yet the "alternator inop" light remained extinguished even while the battery was discharging. I operated VFR during this period and learned that **my Avidyne display would dim when the system voltage fell below a certain threshold**.

Any change in the behavior or appearance of electrical equipment makes the entire electrical system's operation suspect. My experience last week was the same way. Thanks for letting us learn from you, Jeff.

Reader (and my one-time flying student) Rick McCraw wraps it up for us this week:


Hi Tom. Much as I've enjoyed *FLYING LESSONS* since first subscribing, I found the account of your Council Bluffs-Wichita trip to be especially useful and surprising. Among the news flashes I gleaned:

- **Annunciators should be included in the preflight check.** As much as I've been working on flow-and-check, I hadn't thought about annunciators.
- **Voltmeters are more important than I thought.** I don't yet have an EFIS and don't have a voltmeter. From my early flying days I remember voltmeters that plug into the lighter socket, but I haven't been able to find one for my 28-volt system.
- **It's important to verify gear down and locked if there are electrical issues.** I could have easily been "that guy" who experienced gear collapse after an alternator failure.
- **Late-model alternators that fail are less prone to putting metal into the engine.** I wonder if that means that the (so far hypothetical) failure of my two-year-old alternator doesn't necessarily dictate an immediate landing.

That's a lot of learning from one newsletter. However, I do wonder if it is good practice to have reset the breaker several times, as much as we've examined that question after the [Cessna] 310 crash in 2009. Thoughts?

Great *LESSONS*, Rick. I only reset the breaker once, and only then after pulling it myself and still giving it a minute before reset. The autopilot shut itself off several times, but it never popped the breaker.

As a result of the inflight fire in a Cessna 310 to which you refer, Rick, the (U.S.) Federal Aviation Administration published Special Airworthiness Information Bulletin (SAIB) [CE-10-11](#). This SAIB provides **best practices for the reset of circuit breakers in flight, inspection and maintenance of electrical systems, and issues of aging aircraft wiring**. "It is important to note," according to these best practices, "that many older aircraft may have little or no guidance on resetting policy in their airplane flight manuals."

	FAA Aviation Safety	SPECIAL AIRWORTHINESS INFORMATION BULLETIN
SUBJ: Electrical: Fire Hazard in Resetting Circuit Breakers (C/Bs)		SAIB: CE-10-11
<i>This is information only. Recommendations aren't mandatory.</i>		Date: December 23, 2009

Specifically relating to circuit breaker reset, the SAIB recommends:

1. Mark those [circuit breakers protecting wiring to equipment that is] essential for safety in flight.
2. "Essential" circuit breakers should be reset in flight only once.
3. After at least one minute;
 1. If there is no remaining smoke or "burning smell"; and
 2. the affected system and equipment is needed for the operational environment,then attempt reset of the breaker, only once. If the breaker pops a second time, do not reset it.
4. Do not reset any non-essential C/Bs in flight.
5. Revise the preflight checklist to delete "Circuit breakers-In" if applicable and insert: "Check circuit breakers and if a circuit breaker is not set, do not reset the circuit breaker if there is a related maintenance malfunction."

Thanks for prompting a review of the FAA's guidance on circuit breaker reset, Rick.

See https://www.faa.gov/files/notices/2009/Dec/SAIB_CE-10-11.pdf

Questions? Comments? Send them to mastery.flight.training@cox.net.



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Why I Wish I Had Been Flying a Piper Cherokee

I was teaching a student last Saturday about high density altitude as part of his transition training in a Beech Debonair. What better way than to fly from Wichita up to Colorado Springs, Colorado, where the airport density altitude was over 9000 feet for most of the day.

It was September 11, and as we checked in with Springs Approach we heard several transmissions about a USAF "missing man" formation over the US Air Force Academy campus, likely part of a commemoration of the terror attacks of 20 years ago.

I heard the pilot of a Piper Cherokee check in at 8500 feet altitude. Bear in mind the airport elevation at Colorado Springs is 6200 feet above sea level, so the Cherokee was just a little more than 2000 feet above ground level. The Springs Approach controller replied to the pilot, "Maintain 8500 feet, traffic is three high speed F-16s from a missing man formation that will pass directly below you."

And that's why I wish I had been flying a Piper Cherokee last Saturday.

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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

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