



FLYING LESSONS for July 8, 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:

Two horrific crashes appear in preliminary form in my [Beech Weekly Accident Update](#) this week. In them four people died in two separate new-airplane experiences, both flight ending abruptly during what should have been the very beginning of long, enjoyable associations with two amazing aircraft.

See <http://www.mastery-flight-training.com/beece-weekly-accident-updat-2.html>

The type of aircraft involved in these crashes is really irrelevant to what happened. That's another way of saying, don't discount these examples because you fly a different type of airplane.

Here's a synopsis of publicly reported and posted information (much still unofficial) about the first crash:

The pilot of a Beech Debonair and his passenger were killed when the airplane crashed in a forest near their planned destination. The 28-mile trip began at about 2 AM and lasted about 15 minutes. Extensive thunderstorms moving into the area may have prompted the pilot, who was not instrument rated and who had earned his Private Pilot certificate about six months earlier, to attempt the flight home in the middle of the night. Local sources report widespread ground fog at the time of the attempted flight.

The pilot has purchased the Debonair about two weeks before the final flight. In the time since the purchase he had made a series of five flights including the last one, each under 15 minutes' duration, most between the departure and destination on his final flight. The night before the fatal flight the airplane flew a little less than an hour after dark local time, perhaps a night currency session before the final flight home the next evening.

And here's what's been published—yes, mostly unofficial—about the second:

The new owner of a Beech Bonanza and his mentor (instructor?) pilot made a fuel stop in Colorado while flying the airplane from its previous base in California to their home in New York. The owner did not hold an instrument rating and earned his Private Pilot certificate in early 2020. The mentor pilot was an Airline Transport Pilot; he had filed an IFR flight plan that included a standard IFR departure routing designed to accommodate extremely high terrain near the airport. At departure they were cleared on this route, but for some reason canceled their clearance and departed under visual flight rules. The aircraft climbed in a wide spiral over the airport until reaching 11,000 feet then turned to intercept their planned route. The airplane collided with terrain at about the 12,400 foot level a few minutes later.

As the official investigations discover and publish official information I may have more to say about the specifics of these crashes. But with what we know—unofficially—so far, both appear to be the result of major failures in aeronautical decision making (ADM). Why would a newly minted pilot in an airplane he'd flown for less than three total hours attempt a middle-of-the-night VFR flight in an area of fog? What could make a pilot who had held his certificate for less than 18 months accept his mentor's plan for a standard instrument departure but then after engine start change the plan with his mentor/instructor's consent or over his objections, and presumably with no mountain flying experience, and only partially complete a visual climb over the airport before flying under control toward and eventually into mountainous terrain?

For over a decade flight instruction and evaluation (written and practical tests) have emphasized aeronautical decision making (ADM) as much as—if not even more—than traditional stick-and-rudder pilot skills. The Airman Certification Standards (ACS) require testing applicants for pilot certificates and ratings on aeronautical knowledge, risk management and flying skills. Evaluating risk identification and mitigation...key components of ADM...is *the* primary change in training and checkrides in the transition from the old Practical Test Standards (PTS) to the no-longer-so-new ACS.

In this light our two cited crashes might make one wonder—it makes *me* wonder, anyway—about these questions:

1. What did the change to ACS do to prevent the types of decision-making apparently responsible for causing these crashes?
2. How could a pilot train for and earn a Private Pilot certificate under the ADM-heavy Airman Certification Standards and still make seemingly unreasonable and ultimately fatal decisions only a few months later?
3. (For instructor pilots): Does the training and checkride preparation you provide Private Pilot students under the ACS fully prepare those pilots to make decisions that would prevent these types of accidents?
4. (For pilot examiners): Do ACS-based Practical Tests identify and fail applicants who might make decisions like those that led to these accidents?
5. (For regulators): If ACS-based training and evaluation do not prevent these types of accidents, was the massive change from PTS to ACS meet its goals?

Ultimately the pilots-in-command are solely responsible for the terrible outcomes of their flights. But if the preliminary facts of each case are even close to correct, they raise these **tough questions**. If we in fact can train judgment that continues beyond the flight test, what do these crashes tell us are we **not** doing correctly?

What do you think? Continue the conversation at mastery.flight.training@cox.net.



See <https://pilotworkshop.com>

Debrief: Readers write about recent *FLYING LESSONS*:

Reader and US Marine Corps aviation training director Randy Myers writes about [last week's Debrief](#):

As always, I enjoyed *FLYING LESSONS* this week, especially the anonymous 64-year old pilot and his quandary about speaking to his friend about his complacent attitude with regard to running up his late model, fuel-injected Cessna 182.

While I don't disagree with your suggestions to emphasize what the airline and corporate professionals do to battle complacency, I would also suggest that the anonymous pilot **confront his friend directly**. After all, they are friends, and they both are private pilots who share that privilege and accomplishment.

Remind his friend of the five hazardous attitudes and that he is demonstrating at least three of them.

Also, it never hurts to **throw in a dose of humility** when providing friendly counsel – we've all demonstrated at least one of the five hazardous attitudes from time to time.

1. **Anti-authority (Don't tell me)**. An attitude found in people who do not like anyone telling them what to do. They may regard rules, regulations, and procedures as silly or unnecessary. However, it is always one's prerogative to question authority if it's believed to be in error.
2. **Invulnerability (It won't happen to me)**. Many people feel that accidents happen to others, but never to them. They never really believe that they could be personally involved in an accident or mishap (such as an engine failure on takeoff). Isn't that why we do runups – to check acceleration, check for vibration, check for unusual sounds, check gauges, etc.? Pilots who think this way are more likely to take chances and increase risk.
3. **Macho (I can do it)**. Pilots who are always trying to prove that they are better than anyone else (or think the way they conduct, or fail to conduct, procedures is the correct and only way). Pilots with this attitude will try to prove themselves by taking risks in order to impress others.

While the other two hazardous attitudes (**Impulsivity/Do it quickly** and **Resignation/What's the use?**) might apply in this case, the first three seem to best capture demonstrated attitudes that need to be addressed.

I would also remind the friend that **certain risk management procedures are easy, effective, and provide additional “no cost” insurance**. It's akin to wearing a seat belt in a car or airplane and a helmet on a motorcycle. If his friend's “experience with his airplane” is the reason to not conduct a runup, that indicates a **false sense of security that his airplane must be invulnerable to mechanical failure**. That is a definitely a hazardous attitude.

Hazardous Attitudes Definitions and Antidotes as defined by FAA (2009, p.2-5).

Keep up the great work!

Excellent advice, Randy. Thanks!

See <http://www.mastery-flight-training.com/20210701-flying-lessons.pdf>

Reader John Majane adds:

The fellow who takes his C182 out without a preflight runup is just on a fool's errand that will not end well. Every time I get ready to fly I pull the dog eared manual out and go through every single item on the list religiously. I have had instructors ask why do you pull the book out since I have had the plane so long. I tell them **this way I never have to worry about forgetting something**. The jet guys adhere to this why not us? I also believe another factor to safe flying is to fly. To many will not fly for three or four weeks and then take a long trip with maybe two landings total. The hours say they are proficient but from watching some of the takeoffs and landings it is clear they are not.

Thank you, John. Recall that the concept and practice of checklists in aircraft developed as a direct result of the [crash of the prototype of what became the B-17 Flying Fortress bomber](#):

...on October 30th 1935, Boeing chief test pilot Leslie Tower and Army Air Corps test pilot Major Ployer Hill took the Boeing Model 299 [the prototype B-17] on an evaluation flight. After takeoff the aircraft was seen to enter a steep climb and then stall, after which the aircraft nosed over and crashed killing both Tower and Hill. Two observers were injured but survived the crash. It didn't take long to determine the cause either: The crew forgot to remove the gust locks that immobilize the empennage control surfaces (elevators and rudder) on the ground. In neutral position the locked control surfaces allowed the Model 299 to take off but not to maneuver.

As a direct result of the failure of these highly experienced test pilots first the U.S. Army Air Corps, and eventually the entire aviation world, made use of flight checklists the Best Practices standard operating procedure.

More recently, the fatal crash of a Gulfstream IV corporate jet shows the hazard of experience still leads to complacency and forgotten checks. From a [National Business Aviation Association \(NBAA\) report](#) in response to an investigative challenge from the NTSB:

In its final report on the May 31, 2014, Gulfstream G-IV accident at Laurence G. Hanscom Field in Bedford, MA, the NTSB recommended that NBAA work with existing business aviation flight operational quality assurance groups to analyze the extent to which noncompliance with manufacturer-required routine flight-control checks before takeoff exists.

With access to modern flight data recorder and similar flight information recording systems, NTSB and NBAA were able to determine a long-term systemic failure to follow standard procedures, among them pretakeoff control checks that would have detected a forgotten gust lock. Again, this was a highly experienced and proficient crew in a flight department that had recently earned the highest level of industry safety accreditation. But for want of a routine of using checklists....

See:

<https://www.avgeekery.com/model-299-boeings-big-bomber-design-rose-from-its-own-ashes/>

<https://nbaa.org/wp-content/uploads/2016/09/nbaa-report-business-aviation-compliance-with-manufacturer-required-flight-control-checks-before-takeoff.pdf>

Reader, corporate pilot and aviation safety educator Jeff Wofford sees this as a challenge for us to rise to:

I continue to enjoy reading the weekly *FLYING LESSONS* articles. I wanted to comment on the first letter on July 1st where the pilot asked about advice to give another pilot on the need to follow checklists and do a run up. To be honest, I had to think about my response for a day or so. My first response would not have been fit to print!

You hit the nail on the head when you described the difference between Professional Aviation (Air Carrier, Charter, and Corporate) and Light GA [general aviation]. However, the accident numbers are worse than described. In the last 10 years, US Part 121 Air Carriers only experienced 1 fatality. By comparison, Light GA had several thousand fatalities over that same time period. NTSB statistics show that GA experiences over 600 fatal accidents every year. Our intrepid “No Run Up Required” pilot is likely to be one of those statistics. So, my advice to his friend is to **point out that he is making a dangerous assumption** that since his airplane is newer and fuel injected, it is less likely to have a problem. **If you don’t have the time to use a checklist, you’ve got bigger issues.** The fact that he announces “No Run Up Required” to the world is indicative of a problem.

I’ve been a professional pilot for over 41 years and currently fly everything from large turbine-powered jets to a Cessna L-19 Birdog and I use checklists and do a run-up or the equivalent in all the airplanes I’m flying. I still maintain my CFI and primarily do recurrent training and flight reviews. I always stress the need to follow SOPs and use checklists. **Flows and mnemonics are useful tools, but they do not replace checklists.** It doesn’t show how much you know or how capable you are when you skip using checklists, it’s shows the exact opposite.

Light GA is capable of replicating at least part of the systems that have served professional aviation:

- Develop a “safety program” for your operation. SMS [Safety Management System] is scalable and can be applied to someone flying an older 182 or any other aircraft.
- This safety program revolves around building SOPs and following them.
- Maintain your airplane (or if you rent, make sure the rental airplane is maintained).
- Make sure you are maintained (recurrent training, proficiency, health concerns/human factors, etc.)
- Follow the rules
- Check the weather
- Set and follow personal minimums!

So, while Light GA may not have the robust systems in place that an airline or a corporate flight department may have, but, we can certainly do our best to apply many of their processes. We also need to hold each other accountable. **If you know someone is doing something inappropriate, say something to them.** It’s better to upset them than to attend their funeral. A lot of this goes back to our old battle with hazardous attitudes like macho and Invulnerability. No, you’re not superman, and yes, *it can happen to you.*

The only way we will ever make a significant improvement in light GA accidents rates is to improve compliance with following proven procedures, following personal minima, and following the rules. Flying is one of the most enjoyable and satisfying things we can do in our life. We can have a great time doing it, but we can also *do it the right way*.

I have just one question, Jeff, one you and I have discussed before. The core concept of a Safety Management System (SMS) is a safety deviation reporting system to an oversight board that has authority to take corrective action up to and including grounding of the pilot (or preventing a mechanic or other service provider from working on the airplane unsupervised). For the vast majority of lightplane operators, up to and including the owner/pilot of turbine-powered airplanes who flies in support of business but is not a full-time pilot, and who reports to no one about use of the aircraft. My question: **with no oversight board or supervisory authority, how can SMS work for the single-pilot operator?** Most of the *elements* of SMS, including those you mention—SOPs, aircraft maintenance, pilot training, adherence to regulations—are entirely scalable to the single-pilot operator. But is it right to call it a Safety Management System in this context?

If you, Jeff, or any other readers can help me find the distinction please do. The answer may prevent future accidents like the two that prompted our *LESSONS* this week. Thanks, Jeff!

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

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