

FLYING LESSONS for November 18, 2010

suggested by this week's aircraft mishap reports

FLYING LESSONS uses the past week's 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 make and model airplane have little direct bearing on the possible causes of aircraft accidents, so apply these *FLYING LESSONS* to any 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.

If you wish to receive the free, expanded *FLYING LESSONS* report each week, email "subscribe" to mastery.flight.training@cox.net.

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This week's lessons:

Pilots are optimists. We set goals and know we will attain them. We expect the "right" outcome and, usually, we get it. We're confident in our ability and trust the airplane to perform.

Pilots are pessimists. We constantly think that something may go wrong. We fiddle over an engine monitor looking for the slightly change in indications. We check and cross-check instruments; if we own an airplane we brag about the system redundancy and number of back-ups we have, because something may fail. Even the healthiest among us still has a little fear each time we go in for a flight physical. If something *does* go wrong, our first thoughts are about the inconvenience and the loss of "up" time, and the cost and effort of making things right.

Hence most of us go into denial when first faced with a problem. Our inner optimist and pessimists duke it out, knowing something's amiss but not wanting to admit it, rationalizing a course of action that minimizes inconvenience and expense by *knowing* everything will be okay. Denial is most prevalent when we've got family on board, or we're flying to meet somebody else's scheduled meeting or event, or any time we're on the way home. Afterward if you ask the pilot-in-denial, he/she will almost always tell you "I knew better than to do that."

It's human nature to rationalize, and if nothing else pilots are very human. Most of us know when we're pushing limits, or taking unnecessary risks. We know better. We just have to convince ourselves "on the fly."

I'm guilty, too, of rationalizing away anomalies in the air, and when faced with troubleshooting aircraft issues of honing in on the easiest (and usually lowest-cost) possibility first instead of immediately considering the full range of possibilities, to make sure more hazardous situations are avoided before the answer is known. It is indeed in a pilot's nature.

We'd like to pretend otherwise, but airplanes are very complex machines operated in an unforgiving environment. And they can kill you—***if you let them***. History shows that nearly 80% of all accidents come after a pilot chooses to do something...or chooses not to do something.

The great news is, then, that doing what you know to be right, to erring on the side of caution, and by recognizing when you're deciding to do something (or not do something) not because of good evidence, but instead because of rationalization over inconvenience or cost, that you're almost assured of an enjoyable, safe flight. If you have a question, land and check it out. If there's an unusual indication, get a mechanic's opinion. If there are discrepancies between what you expect and what the airplane or engine is delivering, investigate it thoroughly.

Turbocharging has become quite popular in high-performance airplanes, whether factory-equipped or modified in the aftermarket (most frequently as "turbonormalizers" that permit development of sea-level power to high altitude).

Turbos create additional power for improved performance. But the additional complexity comes with the potential for failures that require close attention to power development.

An uncommanded loss of turbo power might come from relatively benign causes, like ice or dirt on the induction air filter. Operating through alternate induction air (in fuel-injected engines) may not permit full power development. But a loss of turbo boost can also point to an imminent catastrophic failure—from massive oil loss, or exhaust leaks that are the leading cause of engine fires.

Trouble is, there's no way to tell from the pilot's seat. Any unexpected loss of turbo boost calls for landing at the nearest airport...and a careful watch of oil pressures and for signs of an engine fire that might make it necessary to pick the closest field if an airport isn't immediately available.

For more listen to my podcast:

TURBO TROUBLES

Download an [audio recording](#) of "Turbo Troubles".

Download the [presentation Powerpoint diagrams](#) to follow along during the audio.

See:

<http://bonanza.org/documents/Turbo%20Troubles.mp3>

<http://bonanza.org/documents/Turbocharger Simplified.ppt>

Comments? Questions? Tell us what you think at mastery.flight.training@cox.net.

Debrief: Readers write about recent *FLYING LESSONS*:

Last week *FLYING LESSONS* focused on engine and electrical fires in flight. This week the [Flight Safety Foundation](#) has published a list of [air carrier fires in flight](#) for May and June 2010—an amazing 14 inflight fires in two months! If it can happen to them it can happen to unscheduled airplanes too. Review [last week's report](#), and be ready if you're ever faced with a fire in flight.

See:

<http://flightsafety.org/>

http://flightsafety.org/asw/oct10/asw_oct10_p64.pdf?utm_source=MagnetMail&utm_medium=email&utm_term=bonanza8@bonanza.org&utm_content=AeroSafety%20World%20October%202010%20Is%20Now%20Available&utm_campaign=AeroSafety%20World%20October%202010%20Issue%20Is%20Now%20Available

www.mastery-flight-training.com/20101111flying_lessons.pdf

Also addressing in-flight fires, reader Marc Charron writes:

I read through your fire emergency checklist. you fail to mention the firewall air cutoff, the red handle on the left side that closes the heater and defrost intake. I have that on my fire checklists.

Hi, Marc. That item is specific to the Beech Bonanza and Debonair. As many may know I happen to have a fair amount of experience with Beech airplanes. But *FLYING LESSONS'* readership is only about 20% Beechcraft, last time I polled. As I wrote, additional items may be added by specific POHs. Your comment is precisely a point I tried to make last week—that there is a general sequence of events to follow in the case of an engine or electrical fire in flight, but there may be specific tasks to accomplish that are vital for a given make/model of airplane. Get in the books (as Mark has done) and memorize the specific checklist for each airplane you fly.

Reader Rick Herrmann asks:

I have always read if wing is on fire, "slip aircraft so flames blow away from aircraft." So... if the right wing is aflame, do I: Lower nose (and flaps/gear, per your article), kick in Left rudder (despite my instructor's admonitions don't slip with full flaps) and hold right aileron? Thanks; I enjoy and read your weekly tips.

Hi, Rick. First, do not violate any airplane limitations. If you're flying a type that is prohibited from slips with full flaps (such as the high-wing Cessna singles), it may be that elevator control is lost in this condition. You don't want to add that to an in-flight fire.

If the right wing is on fire, lowering the left wing and applying hard right rudder will put the airplane into a slip that carries the flame away from the airplane's cabin. If a nose-mounted engine is on fire, a steep slip one way or the other may also keep the worst of the flame away from the cockpit (in Air Force pilot screening T-41As we joked to "slip so the flames go to the instructor's side of the aircraft"). Regardless, the main purpose of the slip is not flame-direction, it's getting a burning plane on the ground absolutely as soon as possible, under control. Practice some steep slips, including steep slips to a landing ("kicking" it level in the flare) to be ready for this rare but harrowing event.

Several readers comments on a recent *LESSON* on making a weather no-go, replacing personal aviation with an airline ticket when working on someone else's schedule. Steve Weintraug writes:

This reminds me of a time last spring when I had to fly to O'Hare on business, which required an overnight stay. It was a beautiful VFR day, but bad weather was predicted for the next day, so I bit the bullet and flew commercially. Upon waking up the next morning, I was happy to see wet, light snow falling, validating my decision, and the weather was miserable the whole day, with even commercial flights (including mine) being delayed. I was probably the only person in the entire airport happy about that. Had the weather cleared, I would have regretted not flying myself, but as it was, there was no way I could have gotten out, and I had certainly made the right decision.

Steve Berg gives some advice:

I recently made a VFR trip in "iffy" conditions from Lafayette, LA to my home grass strip 10 miles from Southcoast Regional Airport in coastal Georgia. I am an instrument rated pilot but spent 35 years without an instrument rating and looked back on some of my decisions to continue flight in my diagnosed "iffy" conditions. After receiving my civilian instrument rating I seemed to suddenly understand why non-rated pilots get themselves in trouble with the famous "get-home-itis" syndrome.

I was very fortunate to have a good flight school, the US Air Force. The training included extensive ground school in weather and meteorology with some wonderful WWII training films that I would love to see again. They were three dimensional animated weather films showing when not to go and how to go above or below and carry out the mission, which was to destroy the enemy. Very good stuff.

With this background I undertook the flight described above. All went well. I stopped for fuel and managed to get off ahead of an approaching thunderhead with full knowledge on how close *not* to get.

On the way it started looking pretty bad at my destination. I could not make a decision from what I could see and did not have on board radar or XM [weather uplinks]. The solution to this problem was simple, call flight service and get an updated weather report. I discovered the ominous system lurking over my destination was heading north and it would be clearing. I was able to go on home without IMC or nasty conditions and was still glad to be able to go on home. Knowing the weatherman on the ground isn't able to see the whole picture I had already picked out my layover field just in case, but this time I didn't need it.

My answer, take meteorology yourself. It is an esoteric knowledge and I am of the opinion that most private pilots don't have enough knowledge. Knowledge won't keep you from making a bad decision but it is more likely to help you in making a good one.

Tom Allen asks:

I just read your newsletter where you say to descend in the Green to maintain structural integrity. I was flying with a seasoned charter pilot into Dallas the other day. We were in really smooth air even though the XM weather was green and yellow and we were clearly IMC. He was descending with cruise power at about 210 which is right in middle of the yellow arc (190MPH to 225MPH). I was a little concerned but he otherwise seemed to be very on top of things. What would you advise?

I advise slowing to within the green arc for descent in IMC. It's common to suddenly encounter turbulence in such conditions, and you need to be below the caution range *before* encountering the first bump.

John Hodgson updates us on display of runway NOTAMs in the cockpit through XM Radio:

I have a dual G530W/G430W installation with a G600 and XM. Yesterday I checked NOTAMs in flight and closed runways are displayed.

Thanks, John. Reader Karl Thomas wraps it up this week writing about the rewards of training in actual IMC prior to earning the instrument rating:

After doing a month's worth of approaches under the hood in VMC last year as I finished up my instrument training, I headed to the airport for another session as the weather deteriorated & thankfully my instructor agreed we should go do some "actual" approaches !! We filed IFR to an airport about 30 miles away, did approaches from both directions there, went down to a VOR & shot a VOR-A approach into airport about 10 miles out & then back home where weather had gone down to 400 ft & 3 [miles] - shot [the] GPS approach & landed. The best hour and half of training I had experienced - 2 weeks later I passed the checkride.

Monday, my wife & I were coming back from an attempt to watch the space shuttle launch. {We} wound up in northern Louisiana with a severe lack of VMC & did [the] GPS into Ruston - her first instrument approach - she was impressed at how well it went & how the airport popped out in front of us !! A year ago she was afraid to even fly NEAR clouds!

Great job on the weekly reports - really enjoy them!!

Thanks, Karl. Congratulations on the instrument rating!

Comments? Write us at mastery.flight.training@cox.net.

Automation Erodes Pilot Skills

So reports [AVweb](#). An [article](#) in the *Wall Street Journal* cites FAA scientists as saying:

Increasing reliance on cockpit automation appears to be significantly eroding the manual flying skills of many airline pilots, who are then "sometimes not prepared to deal with non-routine situations," according to the researcher behind a sweeping air-safety study released Thursday. Presented to an international aviation safety conference here by senior Federal Aviation Administration scientist Kathy Abbott, the study's conclusions buttress the idea that a significant percentage of airline pilots rely excessively on computerized cockpit aids.

FLYING LESSONS has for years been warning pilots that overreliance on autopilots and other cockpit technologies is hazardous—know how and when to use automation, but hand-fly enough (including approaches) that you'll be able to immediately take over and complete the flight safely if automation fails. Long ago as a simulator instructor I learned that "gear up, autopilot on" pilots generally could not fly to private/instrument standards when asked to hand-fly with even a minor distraction event thrown in. You owe it to yourself (and your passengers) to hand-fly as much as you use the autopilot, and to set your personal limits based on your current capability to hand-fly whatever procedure you're using.

In other words, you should not accept an approach to lower conditions just because you'll be flying it coupled to the autopilot. This is especially important in airplanes without a manual back-up to electric trim...if the autopilot does not only will you have to hand-fly the approach and landing, but you may have to do it while fighting an airplane that went radically out of trim before the trim disconnected, leaving you with no way to re-trim for the remainder of your flight.

See http://online.wsj.com/article/SB10001424052748704353504575595641282602022.html?mod=googlenews_wsj

Attitude Flying

For the past few weeks *FLYING LESSONS* has been discussing pilot expectations for the utility of their airplanes, expectations that are sometimes unrealistic, and not at all apparent to newer

pilots coming into the fold. Much is made of the “five hazardous pilot attitudes” as they affect risk evaluation. These attitudes are:

- [The anti-authority pilot](#)
- [The impulsive pilot](#)
- [The invulnerable pilot](#)
- [The macho pilot](#)
- The resigned pilot

Each of these “hazardous” attitudes is also a *necessary* trait for a successful pilot, in measured amounts. It’s when we let one or more of these “natural” pilot attitudes to dominate our thinking that we find ourselves in trouble, making safety-of-flight decisions through subjective eyes. We’ve focused on the [anti-authority pilot](#), who feels that the rules simply don’t apply to him (or her), the [impulsive pilot](#), who acts without regard for the consequences of that action, and the [invulnerable pilot](#), he/she who thinks “it can’t happen to me.” This week let’s look at: [“Bad Attitude: The Macho Pilot.”](#)

See:

www.aero-news.net/news/featurestories.cfm?ContentBlockID=77CC38DE-5D20-4F28-A455-C21D53FCBDDFF&Dynamic=1
www.aero-news.net/news/featurestories.cfm?ContentBlockID=F1E272C4-2B29-4BBD-8155-F6C4FFD6BB63&Dynamic=1
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Share safer skies. Forward *FLYING LESSONS* to a friend.

Fly safe, and have fun!

Thomas P. Turner, M.S. Aviation Safety, MCFI
2010 National FAA Safety Team Representative of the Year
2008 FAA Central Region CFI of the Year



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