

FLYING LESSONS for November 5, 2009

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.

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:

It's our nature to deal with problems. Pilots tend to be positive, can-do people, and the flying culture is built around a vision of succeeding when the airplane itself fails. We celebrate miracles on the Hudson when the real success was the thousands of flights that departed and arrived as planned that same day, without incident.

This is not to say pilots who save the day when faced with massive systems failures are not heroic, because they are. We need to be ready to apply our training, skill and judgment is the time comes. As astronaut (and *FLYING LESSONS* reader) Frank Borman is credited with saying, however, "a superior pilot uses his superior judgment to avoid having to exercise his superior skill." This is the level of expertise we should celebrate and aspire to as pilot-in-command.

Even catastrophic failure often comes only after persistent warnings. A *FLYING LESSONS* reader, who asked to remain anonymous, writes:

I'm an ATP and a captain for a major airline. All of my time for several decades has been in military and air carrier aircraft. Many years ago I flew in a Beech E33C Bonanza, and I remember thinking "this is so slow...anybody can do this." I enjoyed the Bonanza so when I decided to get my own airplane I bought an A36. It had a brand-new engine (1.6 hours since new) and no damage history—safe, and resellable. When I picked it up from a prebuy inspection I had not flown a single-engine airplane in 15 years.

As part of the purchase I had tip tanks installed to increase the maximum gross weight and for greater range. Final installation was running behind schedule so I was rushed when I was finally able to pick it up. I had arranged for a Bonanza-experienced CFI to accompany me but at the last minute he couldn't go. The shop that had done the prebuy found another instructor experienced in type but that schedule didn't work out either. At the last minute they found a third CFI who could meet my schedule, but who didn't have any experience in Bonanzas.

This was the first airplane I'd flown with an engine analyzer, a JPI. As we prepared to leave one of the shop's mechanics told me there was a loose wire on the #6 cylinder and it was not indicating EGT or CHT. The mechanic also casually mentioned the engine would not develop full RPM at full power on the ground. Both these items were squawked but I was left with the impression they could be addressed at my home airport.

On departure I was getting oriented to the cockpit and was distracted by the avionics, especially the JPI and the GPS. The CFI had never seen this type of engine monitor either. The airplane seemed real sluggish on takeoff with three people aboard and partial fuel, and the #6 cylinder was not indicating any temperature. In cruise the airplane didn't seem to be able to get "on the step," instead running very slowly.

As part of the flight home I performed a manual gear extension for practice, and then turned on the tip tank fuel transfer pumps to make sure they worked. Suddenly the RPM was running real rough, and both the #6 and the #5 cylinder showed no temperature. Troubleshooting with the checklist seemed to smooth things

down a bit, so the CFI directed I begin setting up for a practice ILS approach. I said no, instead making a short visual approach and landing.

Investigation showed the #6 cylinder's lifter had failed, punching through a spring on the cam and eating away at the cam near the #5 cylinder as the engine ran. It's amazing how smoothly the engine ran on one cylinder, but the #6 had not been running the entire time I was in the airplane. It was only when the damage spread to the #5 cylinder, and it dropped offline, that the power loss was accompanied by roughness.

The *FLYING LESSONS* from my experience are:

1. There's a reason why indications are bad—don't assume it's a bad lead or a failed indicator.
2. Pay attention to sluggish performance—listen to what the airplane is telling you.
3. Insist on an instructor who knows the airplane, who'll be able to recognize when it isn't running right.

Thanks, reader, for relating your experience. Note: This report was received in mid-October but was not published because higher-profile events filled *FLYING LESSONS*. It may be a precursor event to an engine manufacturer's recommendation this week to ground some engines immediately pending inspection and replacement of new lifters. See www.genuinecontinental.aero/documents/Lifters-FAQ.pdf.

Unfamiliar is unfamiliar, whether moving up, down or laterally in airplane performance. Don't be too quick to rationalize abnormal indications or performance, or to accept the word of "experts" who urge you to accept those abnormalities.

Investigate and remedy any abnormality before flight, even (or perhaps especially) if the engine or component has low time-in-service. If the airplane does not meet performance expectations in flight, land as soon as practical and thoroughly investigate the problem. Listen to your airplane—it may be trying to tell you something.

Questions? Comments? Email me at mastery.flight.training@cox.net

FLYING LESSONS comes to North Texas

Saturday, December 12th, Denton, TX: *FLYING LESSONS* is hosted by Aircraft Precision Maintenance, Inc. The day-long program includes:

- Running out of fuel: Lessons from three case studies
- Keep it on the runway: The lost art of directional control
- A pilot's guide to aviation insurance
- Those who won't: Avoiding gear up and gear-collapse mishaps
- What *really* happens in IMC

Check [here](#) for complete details. Contact Aircraft Precision Maintenance at 940-765-7975 or Wesley@amptx.com to enroll.

See www.thomaspturner.net/Denton%20Dec%202009.pdf

Watch for additional [FLYING LESSONS events](#) in 2010. Contact mastery.flight.training@cox.net if you'd like to arrange a presentation at your conference, FBO, safety meeting or flying club.

DEBRIEF: Readers comment on past *FLYING LESSONS*

Continuing the discussion on whether retractable landing gear should be extended or left retracted for an off-airport landing, reader Bob Siegfried writes:

My take on this question is that it all depends. I really do mean that seriously. Most military and air carrier folks recommend gear down on the basis that the landing gear will shear and absorb some of the shock of landing. Whether or not that works **DEPENDS** on the frangibility of the landing gear. On many relatively light aircraft the landing gear is tied tightly to the primary structure and is not at all frangible.

My thought is along the line of the fellow who says unless we are absolutely certain that the landing surface is hard, level, and has no hidden holes, land gear up.

Thanks, Bob. I still invite anonymous input from air safety investigators, insurance underwriters and others who have seen multiple outcomes and can provide a data-driven view.

Discussing last week's *FLYING LESSONS* about the danger of complacency when flying with cockpit technology reader/airline pilot Paul Zayatz comments:

Your warning about automation and complacency...well said!

An observation [about cockpit] automation. When I first started using an autopilot in the commuters [regional airlines], I quickly came to the realization that this thing would kill me if given the chance. If you tell it to fly you into the ground it will. I cannot overstate - watch it like a hawk!

Secondly, for your question on collision avoidance systems, the systems I have used provide avoidance maneuvers when a threat is detected. I don't know if GA aircraft systems are the same, but if they are and an avoidance command is given, FOLLOW IT, even if the threat is detected visually as it may see other threats we have not. This was learned from experience.

Thanks, Paul. Most general aviation collision avoidance systems provide threat detection, but not conflict resolution, i.e., anything from "someone is out there" to "someone is at your three o'clock and two miles, 400 feet below you and climbing," depending on the system. But as far as I know you need to get well into turbine and air carrier equipment for it to give instructions for collision avoidance. I've noted some distinct operating characteristics of in-cockpit threat avoidance systems...watch for an upcoming *FLYING LESSONS* special report.

From government sources

The FAA has released a Safety Alert for Operators (SAFO) on [rejected landings with loss of visual reference](#) in the last 100 feet above the runway. Although this SAFO is oriented toward air carrier operators flying instrument approaches in low IFR conditions, it's a good reminder for us all—even VFR pilots—who may find ourselves entering thick ground fog at the end of a flight, especially at night.

See www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo/all_safos/media/2009/SAFO09016.pdf.

NASA's *Callback* for October 2009 takes a musical look at weather hazards. Download [these titles](#).

See http://asrs.arc.nasa.gov/publications/callback/cb_358.html.

Do you have a question or comment? Email me at mastery.flight.training@cox.net.

Fly safe, and have fun!

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



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