

FLYING LESSONS for October 21, 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.

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:

From the U.S. National Transportation Safety Board:

While cruising at 8,000 feet, a light twin's right engine experienced an uncommanded shutdown. The pilot attempted to move the left fuel selector to the crossfeed position in an attempt to restart the right engine, but the fuel selector knob would not turn to the crossfeed position.

Shortly thereafter the left engine shut down. The pilot feathered both propellers and set the airplane up for "best glide" in an attempt to reach the closest airport. Repeated attempts were made to restart the engines during the descent but neither engine would restart. The powerless twin was unable to reach a nearby airport and made a forced landing in the backyard of a private residence. There was no fire.

Examination revealed that the fuel selectors were indicating "On" for both fuel tanks. The left fuel selector knob would not rotate to the crossfeed position. The left fuel selector was disassembled, and it was determined that the left fuel selector valve was rigged incorrectly in the crossfeed position. Further examination of the left fuel selector knob revealed that when in the "On" position indicating to the pilot that the left engine was drawing fuel from the left fuel tank; it was actually drawing fuel from the right fuel tank. The left fuel selector had been removed 10 days previously, resealed and reinstalled during maintenance, and approved to be returned to service. Examination of the right fuel selector knob revealed that it moved to on, off and crossfeed correctly. The right tank was found to have no fuel remaining. The left main fuel tank showed evidence of a fuel leak after impact. Both fuel level indicators were indicating empty and found to work properly through their full range of motion from empty to full.

Any time an airplane has been opened up for inspection, maintenance or repair, the possibility exists that in the process of making all the wrong things right, some right things were made wrong. Mechanics and inspectors are professionals, and I don't mean to doubt their professionalism, but they are people too and sometimes *people make mistakes*.

I've picked up airplanes from very reputable shops -- and even accepted a few new aircraft from the factory -- only to discover an oversight that affects the safety of flight. Returning an airplane to service is a team effort, and as pilots we need to accept at least some of the responsibility to determine an airplane is ready to fly when it comes out of the shop.

Any time an airplane is accepted from maintenance, the prudent pilot will give the airplane an extremely thorough check using the Pilot's Operating Handbook Preflight, Before Start and Before Takeoff checklists. Any time the airplane's returned to service warrants your thorough post-maintenance evaluation.

Follow the checklist before every flight, including all systems checks. Once aloft watch the engine and electrical indicators, comparing expectations to indicated reality. Don't shortcut the preflight and Before Takeoff process, and don't disregard in-flight indications that may be warning of system abnormalities and impending failure.

Read my articles "Aftermath, the Post-Maintenance Inspection," parts [1](#) and [2](#).

See:

www.ipilot.com/learn/article.aspx?ArticleID=144

www.ipilot.com/learn/article.aspx?ArticleID=150

The biggest killer of retractable-gear airframes is landing gear-related mishaps (LGRMs)—gear up accidents, and gear collapses on ground. Industry sources tell me the average cost to repair even a “minor” LGRM is USD \$45,000 to USD \$60,000, more in rarer airplane types, and much more in twin-engine airplanes...since LGRMs almost always result in propeller strikes in piston and turboprop aircraft, requiring engine tear-down, inspection, repair and reassembly, in addition to airframe and antenna repairs. Jets are subject to foreign object ingestion, with a correspondingly higher LGRM recovery costs.

Unless the aircraft is insured for no less than about 30% more than the cost of inspection and repair, an airplane that suffered a LGRM will likely be “totaled” by the insurance company, and retired from service to be parted out.

My research shows, in fact, that the U.S. insurance industry pays out over USD \$1 million *every month* because of LGRMs...and that's just the piston-powered aircraft.

There are obvious patterns in what leads to LGRMs. Where there's a pattern, there's an opportunity for recognition and avoidance. My instructional DVD [Those Who Won't: Avoiding Gear Up and Gear Collapse Mishaps](#) is very inexpensive insurance against the most common reason for permanently grounding retractable-gear airplanes.

See:

www.thomaspturner.net/LGRM%20ongoing.htm

<https://secure5.webfirst.com/ABS/Store/#ThoseWhoWont>.

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

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Debrief: Readers write about recent *FLYING LESSONS*

A few weeks back reader Mike Massell wrote to add to an even earlier *FLYING LESSONS* comment:

I also read your information and have an additional suggestion to the following discussion, see below in “two cents worth”:

Reader George Boney writes:

I read *Flying Lessons* and I enjoy your column, plus I always learn something. A small contribution to the "engine failure-land straight ahead" discussion a few weeks ago. I flew with a very experienced (+10k) pilot once whose rule was "10 degrees per 100 ft", i.e. if he was 200 ft off the deck, he could turn 20 degrees left or right to choose an arrival spot (we are not saying whether it will be a landing or crash). Now, I am not sure of the ratio, but I like the concept - for every x feet of altitude, my 'choice' cone grows by y degrees. And when I fly, I look out the windshield and 'watch' that cone expand as I gain altitude. As always, thanks for your great work.

And thank you, George. The cone of options for a given altitude will not be symmetrical—you can go farther with a tailwind, less far into a headwind. But the idea of constantly considering your available options is

prudent.

My Two Cents worth:

In addition to the above something to keep in mind or review is that many runways have a obstacle departure procedure. The A/FD and also on the back of many of the Jepp charts 11-1 or 10-9s there are obstacle departure procedures for a given runway. It is interesting, at my home field, that many of the very high time professional pilots did not know that there was one for one of the main runways that they used daily. You might want to review this data prior to departing so you know which way to go for the better outcome.

Thanks, Mike!

Reader Alan Davis comments on teaching proper control completely through the landing phase:

When working with students, I tell them - The airplane is still a flying machine until it can no longer be lifted off the ground, either by control action OR by the action of the wind. I find, however, especially with new students (and even older ones on flight checks) that they do not realize how long the controls will actually be active and able to lift the aircraft after touch down. Here is a way to "prove" it to them:

- 1) On a CALM wind day when other forces are not in play, the student lands - and relaxes control too early.
- 2) Say - "My Airplane" and simply pull back abruptly enough on the control and the airplane will just lift off the ground.
- 3) Hold the control position to allow the aircraft to settle back to the ground - if done correctly, no power is required.
- 4) AFTER exiting the runway, ask the student what they just saw to ensure that they saw and understood the issue - which was that they started to treat the aircraft like a "ground bound" machine when, in fact, it was still a "flyin' machine"!

I have found that after "seeing" this, as opposed to only hearing it, the understanding is much better, and then the talking by the instructor over the next few landings to encourage them NOT to release too soon becomes much more effective.

Great advice, Alan. Thank you.

Attitude flying

Our discussion of pilot attitudes and the marketing of light airplanes as all-weather, owner-flown business machines continues:

I spent 35 years working as a gynecologic surgeon and flew what was described as a "forked tail doctor killer". As I went along, reflexes slowed, but the judgment improved. I scared the bejesus out of myself a few times and have recognized my inadequacies. Nowadays I'm a member of the California Coastal Commission and fly into little airports for meetings. Private flying is a great time saver for someone who dislikes long car trips.

You have accidents/incidents as your focus and may be quick to recognize an ad phrase that worries you. We have to rely on the instincts developed over time with our various flight instructors. There will always be airplanes that perform feats beyond some pilot's ability and the flight instructor role is to teach temperament and judgment along with finger skills. Always remember that "you are not a scheduled airline".

This is a worthy discussion and it will be interesting to read the array of comments expected.

Dan Secord

Thanks, Dan. I'm interested, and actually very gratified, to see this discussion turn to the issue of instructor qualification and professionalism. Flight instructors set the tone for all flying; in the owner-flown market (representing the largest segment of *FLYING LESSONS* readers) CFIs and required Flight Reviews are the quality control mechanism in a world requiring utmost professionalism, focus and proficiency. Are we instructors up to the task? What do you think? Let us know at mftsurvey@cox.net.

Crosstalk

Reader John Townsley writes:

Dunno if you've seen [this](#). Gene [Benson] does a great, low tech, very thoughtful news letter on aviation safety issues. It's a good read. Gene discusses some recent mishaps that resulted from failure to follow checklists. I'm sure we are all aware of others, and may even have had one of our own "teachable moments" because we 'forgot' a key step or procedure. Check out Gene's library of past newsletters and webinars while you are at it.

One of Gene's other newsletters is on "abnormal procedures". I recently flew as a non-flying crew member in a [Cessna] 206 that (we later discovered) had a bad jug. During the last takeoff of the day we had less power than expected and came close to obstacles at the departure end of the runway. We discussed this while in the air. After completing our flight we noted the engine backfired and 'popped' as we taxied in. I'm not familiar with the aircraft, nor was the flying pilot. Still we suspected something. Density altitude or wind shear from a shift in wind midfield (because of less than expected climb out performance)? Mag timing (because of rough running during taxi after landing)? During the preflight next morning the cowl came off and... the pilot found a cracked jug. Lower than expected performance could be "abnormal". So would popping and rough running during taxi. Later I was told this was the fourth cracked jug for this aircraft. Perhaps other factors are at play as well.

Thanks, John!

See www.genebenson.com/newsletter/.

The Latest from FedLand

The September/October 2010 issue of [FAA Safety Briefing](#) focuses on proficiency and its absolute importance for pilots and aviation maintenance technicians. We provide tips on developing your personal improvement plan, address getting back to flying after an absence, give suggestions on how AMTs can keep their edge, talk about the complicated subject of receiving compensation for your flying, and more.

See www.faa.gov/news/safety_briefing/.

Question of the Week

Continuing the theme of the flight instructor-as-quality-control, this week I ask instructors to answer and comment on these questions:

Do you find that most pilots you instructor on Flight Reviews and Instrument Proficiency Checks (or international equivalents) have a good grasp of performing weight and balance and flight performance calculations? Did you address shortcomings, and if so, how?

On Flight Reviews and/or initial pilot checkout in an airplane type new to the owner, have you been in the position of having to tell the owner his/her airplane won't carry the load he/she expects, that gross weight increases mean gross performance decreases, or that the airplane is not capable of flying in weather conditions the owner contemplated? How did you handle it?

Do you require your Flight Review students to make airplane performance calculations as part of the review?

All responses will be kept confidential. Let us learn from you at mftsurvey@cox.net.

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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