FLYING LESSONS for December 16, 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:

I didn't get to fly much with my dad. A father of five, he worked two jobs to make ends meet, and high blood pressure caused him to lose his medical before I was six years old (perhaps all three facts were related?). But I do remember him taking my older brother and me up to "warm up the oil" in what was almost certainly a Cessna 172, most likely before an oil change at his second job as an A&P mechanic at Ann Arbor Aero in Ann Arbor, Michigan.

I do have Dad's logbook and it lists a number of pre- and post-annual test hops in customer airplanes (he didn't take passengers up except before routine oil changes). It was part of the service then—when you had your airplane inspected, maintained or repaired, you could be assured the mechanic or some other FBO Commercial pilot would take it up for an operational check before returning the airplane to service, and to its owner.

It's very rare now for the shop to fly your airplane after service. Time and insurance requirements usually get in the way. Instead, you get a call that the plane's ready, you pay the bill and pick up the keys and the logbook endorsement at the FBO, and off you go. Many pilots and owners may not think of it as such, but **you're a test pilot** when you make the first flight after inspection, maintenance or repair.

How do you safely fly this test flight? Most of us don't have formal training in flight test procedures, but with a little forethought you can fulfill this responsibility:

- **Plan your flight, and fly your plan.** Test pilots don't take off without a "profile," a specific plan of what you'll do on the flight, in what order, and what will require an immediate return to the airport.
- **Do a *very* thorough preflight check.** Your eyes are the final quality control check of the shop's work. Spend a lot of time completely inspecting the airplane, using the Pilot's Operating Handbook (POH) or other written Preflight Inspection checklist to assure you've missed nothing.
- **Keep it short, keep it close.** Make your test flight near the airport, in the pattern if possible, and within gliding range of a landing spot at all times. Fly long enough to check things out, but no more—land and do a final visual check on the ground before flying away.
- **Eliminate the variables.** Insist on day, VFR conditions with little or no crosswind for your return-to-service flight. Fly at the lowest safe weight (less weight = more performance). Don't put anyone else at risk, unless you have the opportunity to take along the mechanic (especially one who did any of the work) or an experienced fellow

pilot to record indications. Make your test flight when you're under no time pressure to be somewhere else that day.

When are you a test pilot? You're the test pilot any time this is the first flight after:

- Annual inspection
- Any engine, electrical system or avionics work, adjustment or installation
- Any routine maintenance or repair
- Any modification to the airplane, especially if it alters the aircraft's performance

You're also a test pilot any time you're flying:

- An airplane in which you have less than five to 10 recent flight hours.
- An amateur-built ("experimental") airplane in which you have less than 10 to 25 recent hours.
- At a higher density altitude than is normal for you.
- At a higher weight than is normal in your experience.
- At a center of gravity (CG) location that is more than a few inches further forward or aft of what is normal for you.
- Into or out of a runway that is significantly shorter than is the norm in your experience in that type of aircraft, and/or that has a significant obstacle and/or runway slope or surface type when you do not have experience in those environments in that airplane type.

In this experience-based test flying, you don't need to make a short test hop first, but approach the flight very cautiously:

- Keep it in day, visual conditions, with a very conservative maximum crosswind for takeoff and landing.
- Do a thorough preflight inspection using a printed checklist.
- Diligently compute aircraft performance, especially takeoff, climb and landing distance.
- Fly at the lowest safe weight to maximize performance. This may mean more fuel stops than you'd make otherwise, hopping from a short runway to a longer strip to pick up passengers and luggage, or even shipping your baggage ahead so you don't have to carry its weight on the airplane.
- Be ready to abort the takeoff if you're not at 70% of liftoff speed when passing 50% of the computed takeoff distance (thanks to reader Hank Canterbury for reminding me of this rule of thumb).
- Follow your engine operation and fuel management plan closely, tracking actual fuel burn against computed expectations. Increase your normal fuel margins to land with a significant fuel reserve.
- Be primed for a go-around unless speed, configuration and glidepath are stabilized on targets within 500 feet of the ground on final approach.

Take this life-saving responsibility seriously. For more about returning to service after inspection, maintenance or repair, see my articles "The Post-Maintenance Test Flight," parts 1 and 2.

See: www.ipilot.com/learn/article.aspx?ArticleID=144, www.ipilot.com/learn/article.aspx?ArticleID=150

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

Debrief: Readers write about recent *FLYING LESSONS:*

Reader Bob Siegfried writes about last week's *LESSONS* on "taking a look" when weather conditions are poor:

> One of your best! Nothing wrong with any of those situations as long as you have a plan. May I add a comment on the Take A Look?
>
> On any instrument approach I always plan to miss. If the weather is good enough to continue past the DA [Decision Altitude] or MAP [Missed Approach Point] it will hit me in the face and I can always give up my planned miss in favor of the visual approach and landing.
>
> A piece of cake on any precision approach. However, it can get a bit more complicated on a circling approach. It is important that we have a plan to get out of Dodge at any time during the circling maneuver. As I have always maintained, the easiest approach of all is two hundred and a half straight in. The one that takes the most planning and involves the most decisions is the circling approach.
>
> One more small comment on the circling approach. We must remember that the circling approach that has a high MDA [Minimum Descent Altitude] does so because there could be an obstacle in the visual segment that we only clear by three hundred feet. The higher the MDA, the greater chance of there being a significant obstacle.

Thanks, Bob, I always appreciate your input. Reader Lorne Sheren adds a comment about "intentional busts" in the event you're cornered and need to bust airspace or weather to save a life:

> I thought it particularly relevant that you noted that in an emergency situation one should do whatever is necessary to accomplish a safe ending and deal with any regulatory consequences later. A couple of years ago a baseball player and his CFI flew into a building in Manhattan rather than bust Class B. Bad decision. It was pointed out to me once that regulations are enforced from time to time but the rules of physics are enforced 100% of the time.

Thanks, Lorne. I did a podcast (apparently now removed from the internet) on the event you mention about two days afterward, speculating that the flight was a Manhattan equivalent of flying up a blind canyon. Other commentators later made the same observation. A little assertion, and lives would have been saved.

Reader Mike Busch also chimed in on the "take a look" saga with this "savvy" advice:

> [Regarding] "**Taking off** should always include a plan to land right away. Any number of situations—weather, airplane systems, an open door or window, the need to return for something forgotten on the ground—can cause you to at least consider returning to the departure airport, or recovering at another airport nearby." That goes at least double on the first flight after any maintenance!

You're absolutely right, Mike. Thanks. Your comment, and some operational experience in recent weeks, prompted this week's *FLYING LESSONS*, above.

See www.savvyaviator.com

Share safer skies. Forward *FLYING LESSONS* to a friend.

Five-Year Safety Plan

The U.S. Federal Aviation Administration (FAA) has published its Five-Year Safety Plan for Aviation, which includes several objectives for the general aviation pilots that make up the biggest part of *FLYING LESSONS* readers. The Plan lists seven goals:

1. Reduce the commercial airline fatal accident rate.
2. Reduce the number of fatal accidents in general aviation.

3. Reduce accidents in Alaska
4. Reduce the risk of runway incursions.
5. Measure the safety of the U.S. civil aviation industry with a composite index.
6. Ensure the safety of commercial space launch.
7. Enhance the safety of FAA's air traffic systems.

The report stresses the now-long-heard call for reducing runway incursions. It also covers pilot education programs, and emphasizes the need for improvement in the fatal accident record especially in amateur-built ("experimental") airplanes.

I've already been contacted by some industry leaders to discuss this report, and hope to help in some small way to turn these objectives into concrete improvements. You're already helping yourself by doing things like reading *FLYING LESSONS* to become less likely to have a mishap. But if you'd like to do more (at least those of you in the U.S.), contact your local FAA Safety Team (FAASTeam) representative or FAA Flight Standards District Office (FSDO) to see if you can be a part of spreading the lessons of the FAA's Five-Year Safety Plan.

See www.faa.gov/about/plans_reports/media/AVS%20Final%20FY11%20BP%2010-11-08.pdf

Don't try to fly *too* fast

A popular aviation advertising tag line is: "life is short, fly fast." Try to fly faster than your ability to keep up mentally, however, is a sign your need for speed is in demand of a plan (ok, that's *close* to a rhyme). Read "Haste Makes Waste" by Dr. Bill Rhodes (yes, a *FLYING LESSONS* reader) in the Fall 2010 issue of AVEMCO Insurance's *On Approach* newsletter, page 6. Bill uses mishap reports to illustrate why "being in a hurry around airplanes is a bad idea." Consider reading this your *FLYING LESSONS* homework for the week.

See:
www.avemco.com/Articles/OnApproachFall2010.pdf
www.loprestiaviation.com/

Dark adaptation

2008 National Flight Instructor of the Year (and long-time *FLYING LESSONS* reader) Max Trescott turns his Trends Aloft column this week to an issue of flying safety relevant to us all, but especially those of us in the Northern Hemisphere this time of year. Read "Night Flying Safety: What Your CFI Didn't Teach You" on Max's award-winning website. Excerpt: "An ex-Navy pilot told me...after we finished a night IFR training flight that flying IFR at night seemed to him at least 50% harder than flying in the day." Reading this is your *FLYING LESSONS* "extra credit" opportunity for the week.

See www.maxtrescott.com/max_trescott_on_general_a/2010/12/night-flying-safetywhat-your-cfi-didnt-teach-you.html#more

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