FLYING LESSONS for March 13, 2014
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.

FLYING LESSONS is an independent product of MASTERY FLIGHT TRAINING, INC. www.mastery-flight-training.com

This week’s lessons:

As promised, this week we’ll return to:
REASONS FLIGHTS ARE DELAYED, RESCHEDULED OR CANCELED

1. Adverse weather

The last weather-related factor in our discussion is operating in strong or gusty low-level winds. And at last, there’s something we can do about it.

There’s a strong correlation between strong surface winds and any number of aviation mishaps. Failure to climb, landing short, landing long, even gear up landings seem to be more common in gusty wind conditions…most likely not so much because of actual movement as a result of the winds, but more likely the distraction and interruption in normal habit patterns that are driven by wind-generated turbulence.

As you might expect, however, the most common wind-related crash scenario is loss of directional control, usually (but not always) on landing. Pilots fail in two areas:

• Their ability to compensate for crosswinds; and probably more importantly,
• Their ability to decide when to cancel a takeoff or, if airborne, evaluate the effects of crosswind and divert to an airport with a more favorably runway/wind alignment.

In short, pilots don’t seem to do a good job of handling crosswinds.

Plane and Pilot Magazine’s website includes a list of the Top 10 Rules of Thumb for aviation, compiled by author David Ison. The list includes a familiar (but apparently not frequently taught) way to estimate the crosswind component for a given runway and relative wind direction:

• If the wind differs from the runway heading by 15 degrees, the crosswind component is one-quarter (25%) of the wind velocity.
• If the difference between the wind and runway is 30 degrees, the crosswind is half of the reported wind speed.
• If the wind makes a 45-degree angle with the runway, the crosswind component is three-quarters (75%) of the overall wind speed.
• When the windsock is pointing 60 degrees or more from the runway centerline, just assume the crosswind is the same as the total wind.

See www.planeandpilotmag.com/proficiency/pilot-skills/top-10-rules-of-thumb.html
Most flight instructors and pilot examiners drill student pilots on determining the crosswind component for takeoff. The reasoning is usually less about the crosswind control needed, and more about the effect of any headwind (or tailwind) component on computed takeoff distance. Once the checkride’s passed, however, many pilots don’t seem to think a great deal about the wind’s effect on takeoff beyond the selection of the departure runway.

Further, nobody seems to stress the need to evaluate crosswind conditions as part of a prelanding briefing, to decide whether to try it or to go somewhere else. The U.S. FAA’s Airplane Flying Handbook devotes five pages to describing techniques for making a crosswind landing (pages 8-13 through 8-17), but only obliquely suggests deciding not to make the attempt at all:

It is imperative that pilots determine the maximum crosswind component of each airplane they fly, and avoid operations in wind conditions that exceed the capability of the airplane.

The AFH does not mention at all that the limiting factor on a safe crosswind landing is not usually the design features of the aircraft, but instead those of the pilot-in-command’s experience and currency with crosswind landings. My own research suggests that most crosswind loss of directional control crashes, in fact, occur at less than 10 knots crosswind component—well below almost every airplane’s maximum demonstrated crosswind capability. Crosswind control is a pilot issue, not one of airplane design.

The FAA’s Private Pilot Practical Test Standards (PTS), the measure by which almost all U.S. pilots are evaluated to begin our lives in the air, does not mention deciding whether or not to attempt a crosswind landing when an examiner tests a candidate for his or her competence in crosswind landings. To misquote the fictional Jedi Master Yoda, the PTS commands us to “Do, or Try, there is no Do Not,” in crosswind landings. To try (and fail), however, is an unacceptable choice.

We are all victims of our own “can-do” attitude, apparently willing except in the most extreme circumstances to “give it a try”…with the inevitable result repeated again and again in each week’s mishap reports.

We can, however, safely stack our deck in favor of being able to safely make a “go” decision in many cases by:

- Practicing crosswind landings regularly, first with an instructor knowledgeable and current about crosswind corrections the type of airplane you fly.
- Then staying proficient with crosswinds by actively seeking out opportunities to practice crosswind takeoffs and landings in light to moderate crosswind components.
- Using the crosswind Rule of Thumb from the Plane & Pilot article to consciously estimate the crosswind component before every landing, compare that to the maximum crosswind you’ve recently practiced, and make an informed, data-driven decision on whether or not to make the attempt.
- Deciding to go elsewhere any time the crosswind component exceeds your level of proficiency—the true test of your professionalism as captain of your aircraft is knowing when not to attempt a maneuver, and acting on that knowledge.
- Reducing the crosswind component you’re willing to accept by one knot for every two weeks since your most recent crosswind practice, until your personal crosswind minimum is down to five knots.
- Going around at any time during your approach, even if in the landing flare, if you cannot maintain runway alignment.

Conservative? Absolutely! Mishap history shows, however, that conservatism with crosswinds is warranted. Following these six tenets, however, you’ll find you become and remain
able to safely fly in stronger wind conditions than when you evaluated crosswinds more on optimism and hope.

---

**Voluntary or Regulatory? Toward a Solution**

**Last week** I went to (perhaps overly) great lengths to discuss the frustration that it’s the same scenarios again and again that result in serious or fatal general aviation crashes. The total number of crashes has gone down in recent years, to be sure—but so has the estimated number of flying hours, based on economic and fleet-attrition figures. There’s some evidence that the number of accidents per 100,000 flying hours (in the U.S.) has gone up despite the total number going down, depending on whose estimate of flying activity you consider.

**Ideally pilots would adopt voluntary measures** that intend to keep them and their passengers alive. Many in the industry feel, however, that the record shows that voluntary measures don’t seem to be making a difference. They point to the extremely low rate of participation in voluntary, type-specific pilot training programs, and the significant improvement in mishap rates among pilots of Mitsubishi MU-2 turboprops after FAA mandated type-specific training conducted by instructors meeting stringent experience requirements in that type of aircraft.

**Many pilots** fall into a category we call “the unreachables”—pilots who will not get the safety message, or will even take active steps to avoid getting even the minimum required training, let alone go beyond the minimums. “Reaching the unreachable” is the greatest challenge we face in making real gains in personal aviation safety.

**I also discussed** my participation in NTSB symposia that at least in my estimation carried the hint of a recommendation that FAA require more frequent training by pilots of airplanes not affected by Special Air Regulations like that which applies to the MU-2. I gave the highlights of a letter I sent to NTSB after the most recent of those symposia, citing examples based on real pilots I know that show the merely increasing the frequency of training would do little to improve the quality or relevance of the training received.

**Instead I proposed** that, should NTSB be considering any regulatory recommendations to FAA to address the stagnant progress against the fatal crash record, I suggested a strategy might "move the needle" toward the goal of markedly reducing the fatal accident rate.

**As background,** under U.S. FAA rules (I apologize to my non-U.S. readers, and hope you’ll bear with the specifics of this week’s discussion, and focus on the broader concept of recurrent training), pilots not flying in air carrier operations are required merely to log at least one hour of ground instruction and one hour of flight instruction with an authorized instructor every two years—what until the late 1980s the regulations called the biennial flight review, or BFR (it’s now the Flight Review or Required Flight Review). It's entirely up to the instructor administering the review to determine what topics are discussed on the ground (except some extremely broad categories mentioned in 61.56), and what tasks and procedures are covered in flight. There is no stated completion standard for the Review other than the amount of time logged...an instructor may choose to endorse a pilot for a Flight Review no matter how badly he or she performed, and may simply fly around for an hour and call it good, providing little or no challenge to the pilot receiving the review.

**Certainly many instructors** provide a more challenging and relevant recurrent training experience for the Flight Review, and hold the pilot to a certain standard in order to endorse the pilot for another two years of privilege. However, it’s important that **there is no guidance on the items that must be practiced and evaluated** in a Required Flight Review, and **there is no minimum standard to which the pilot must fly** in order for the instructor to provide an endorsement.

**There is parallel** in the endorsement for an Instrument Proficiency Check, or IPC. When in the 1990s the FAA replaced the old Instructor Competency Check (ICC) with the then-new IPC, it
was specifically to require a pilot demonstrate mastery of instrument flight in order to renew his or her IFR privileges. While the old ICC had no requirements or completion standards other than the judgment of the instructor, the new IPC very clearly requires the pilot to demonstrate almost all the tasks required to earn an instrument rating in the first place, and that those items be flown to the Instrument Pilot Practical Test Standards (PTS). There’s still no minimum amount of flight time required, but you’d be very hard pressed to combine the tasks required for an IPC into a flight lasting less than an hour and a half or more.

I’ve never seen data on the rate of crashes by instrument-rated pilots flying on IFR flight plans before and after the change to the IPC. I suspect the record changed little because the U.S. regulations permit pilots to self-certify on the basis of a ridiculously small amount of logged experience within the six months prior to an IFR flight (six approaches, navigation and a holding pattern entry). This self-certification provision may be the topic of a future FLYING LESSONS rumination.

I had only a few years’ experience under the old ICC rules (I remember, to my current horror, “earning” an ICC endorsement for about 15 minutes spent flying an NDB approach in the late 1980s). I suspect, however, that “the needle” moved at least a little in the right direction with introduction of the PTS-based IPC requirement.

My first suggestion:

1. Like the IPC, completion of the Flight Review should require demonstration of Tasks identified from the Private Pilot Practical Test Standards (PTS), and that those tasks be flown to PTS standards as a very minimum requirement to be flown every two years to retain pilot privileges. Pilots of Light Sport airplanes would fly the corresponding Tasks from the Sport Pilot PTS.

Prior to any new rulemaking requiring more training in order to earn a Flight Review, I suggest we try to make the current requirement more effective by attaching some minimum Tasks list and completion standards to the every-other-year Flight Review requirement.

This Tasks list should include flight planning, weather evaluation before and during flight, engine and fuel management and navigation, as well as normal and maximum performance takeoffs and landings, balked landings (“go-arounds”), and stall recognition and recovery (power off and power on, both with wings level and while in a shallow bank). “Soft” skills from the PTS, including cockpit management, traffic avoidance, decision-making and judgment would also be demonstrated and evaluated.
Instructors would still have wide latitude in how they present the Flight Review. Like an IPC, however, pilots would have to demonstrate the ability to fly all the identified Tasks to Practical Test completion standards for the flight to be endorsed as a Flight Review. A really good instructor might have a pilot make a short, say 20-minute cross-country flight to evaluate that pilot’s basic flying ability, procedures and decision-making skills, then accomplish all remaining Tasks on the flight back to the airport of origin.

The most common objection to proposed rulemaking in the area of recurrent training is the added cost of compliance. This proposal would cost the pilot nothing more than today’s review requirement—but requiring practice of those items the FAA considers essential for initial certification as a pilot.

In fact, I took my Flight Review this evening. In 1.5 total flying hours, including 0.5 simulated IFR flying a full procedure approach, missed approach and hold that was outside the scope of the PTS, we covered virtually all the Tasks in the FAA Private Pilot Practical Test Standards without even trying hard. This image shows the current Private PTS task items. Those checkboxes covered in black are Tasks that do not apply—seaplane items. Those colored in yellow are the tasks I demonstrated successfully. Only a very few checkboxes are not covered. These are items we did not do…but could easily have included with little additional time investment. It is very easy for a proficient pilot to complete the Private Pilot PTS items in the same hour each in the air and on the ground the current Flight Review requires. A less-proficient pilot is going to need more than an hour’s training even under the current rules—and by incorporating the PTS an instructor will know the specific Tasks the pilot must practice to return to a minimum level of competence as defined by Private Pilot standards.

My second recommendation comes as a direct response to the somewhat redundantly named Society of Aviation and Flight Educators (SAFE)’s 2011 Pilot Training Reform Symposium, at which I was a speaker, panelist and participant. SAFE’s most recent update on this two-day, May 2011 event was its preliminary report, published in October of that year. The update lists the SAFE’s recommendations as a result of the meeting of dozens of

1. Conduct a thorough general aviation fatal accident root cause analysis to pinpoint underlying accident causality as a means to create effective remedial actions.
2. Create a new flight review option that can be enabled as an FAA-sponsored pilot proficiency award program.
3. Revise FAA doctrine and standards to implement scenario-based testing, risk management, and other higher order pilot skills.
4. Modify flight instructor doctrine, initial testing, and renewal procedures to include the teaching of higher order pilot skills.
5. Implement voluntary flight instructor professional accreditation programs and continuing education that emphasize higher order pilot skills, scenario-based training, and interpersonal relationship skills.
6. Create and implement model curricula that incorporate higher order pilot skills, scenario-based training, and integration of simulation and other teaching methods to include interpersonal relationship skills.
instructors, educators, insurers, other industry leaders and regulators:


It’s somewhat disappointing that there’s not been any official update on any progress toward these goals nearly three years after the symposium. My first recommendation (above) for moving the needle toward safer skies, however, arguably addresses items 1, 2 and 3 on the SAFE list. My second recommendation most certainly addresses item 5, and if you followed up on the specific example I'll soon cite, directly addresses items 4 and 6 as well.

My second recommendation?

1. Aircraft owners’ groups should actively disseminate type-specific knowledge and techniques to flight instructors, including training syllabi and programs that actively teach and provide type-specific accreditation to flight instructors, so these instructors in turn can get informed type-specific training to as many pilots as possible. In short, teach as many instructors as possible what the type clubs have learned about the airplanes they support, so that no matter where a pilot chooses to train, his or her instructor has access to type-specific knowledge and training techniques.

Industry and government, backed with accident investigation and insurance data, uniformly recognize the value of type-specific pilot training in reducing accident rates. Type-club experience, however, is that fewer than 5% of all pilots participate in type-specific training provided by the clubs, and evidence is strong that not many more seek out other sources of model-knowledgeable training or individual, type-expert instructors.

The only way to make a type-specific impression on probably 85% or more of all noncommercial pilots who are not otherwise required by insurance or regulation to take regular, type-specific training, is to educate flight instructors everywhere on specific systems, procedures and techniques that apply to the type of airplane being flown, and to give as many instructors as possible the information and the tools they need to provide model-specific training.

I’m extremely fortunate to have able to put this theory into practice. Many FLYING LESSONS readers know that in “real life” I serve as the executive director of the American Bonanza Society’s Air Safety Foundation. I usually take great pains to separate Mastery Flight Training, Inc. from ABS (which understandably cannot endorse the opinions expressed by MFT or FLYING LESSONS Weekly). The specific program I cite, however, is extremely pertinent to what I feel it will take to reduce the accident rate. That program: the ABS Flight Instructor Academy.

The Academy is an example of a complete flight instructor training system, consisting of online education, training materials available for download and, optionally to seek full accreditation, an instructor standardization/checkride program. Although to the best of my knowledge Cirrus Design was the first manufacturer or type club to develop a model-specific flight instructor training and accreditation program—which I’m told is excellent—it operates as a profit center for Cirrus and, as such, is financially out of reach for most instructors (it also requires travel to Duluth, Minnesota). The ABS Flight Instructor Academy is the first such program operated at a very low, break-even cost as a service of a not-for-profit corporation. And it can be completed virtually any time and anywhere, even outside of the United States…for the expressed purpose of encouraging as many instructors as possible to take the training. No matter from whom a pilot wishes to take instruction, that instructor has access to the full instructional history...
of the experts to help him/her provide a valuable and relevant educational experience. Since the Academy’s inception in April of last year, over 130 CFIs who had not previously received type-specific instruction have learned “how to teach Beech” through this program. Check out the sort of thing that keeps me up days, the ABS Flight Instructor Academy.

See www.bonanza.org/instructors/abs-flight-instructor-academy

For several years a loose collaboration of aircraft owners groups, the Type Club Coalition, has been facilitated by the Experimental Aircraft Association (EAA). TCC has been working to share programs like the ABS Flight Instructor Academy, so each group may use them as templates to develop its own version of type-specific training for pilots and instructors. The TCC was…

…brought together for the common purpose of increasing the level of safety in the general aviation community. Whether you fly a type certificated aircraft, a warbird, a homebuilt, or anything in between, all are welcome in the TCC. Many type clubs have already worked hard to create very effective training programs and best operating practices for their members. The TCC is a place where these organizations, as well as individual owners, can come together to further develop these resources. If the community can work together to eliminate the common mistakes of aircraft operation, type-specific or otherwise, the overall safety of GA will increase substantially.

Three TCC member organizations have posted some of their training materials on the TCC website. I was honored to serve as the TCC chairman for about a year and a half, and co-chair for a few months before my professional duties demanded my time elsewhere. My sincere hope is that EAA will continue to breathe life into the TCC and actively support its goal of reducing fatal aircraft accidents by improving the overall state and availability of type-specific pilot training.

See: www.eaa.org/govt/tcc.asp
www.eaa.org

Recommendation 3:

3. To satisfy the PTS requirement to evaluate pilot decision-making skills, before beginning the Flight Review a pilot must present a completion certificate from an accepted Aeronautical Decision-Making course to the instructor providing the review.

Acceptable courses could be from the FAA website, AOPA or another FAA-recognized source. Most of these courses are free, so the pilot invests nothing except the 20- to 45 minutes necessary to complete most such courses. 70% to 80% of general aviation crashes result from decision-making factors. Adopting this recommendation would be the first time the Flight Review specifically addresses the most common contributing factor to aircraft mishaps: pilot judgment.

My fourth recommendation:

4. FAA and all pilots’ groups should:
   a. Implement Recommendation 1 by reference in the Practical Test Standards (the same as the IPC requirement).
   b. Officially encourage Recommendation 2 and support collaboration among the type clubs to share best instructional practices for their mutual benefit.
   c. Incorporate Recommendation 3 to address pilot judgment training.
   d. Monitor flying activity and accidents by frequency and cause for five years after implementation, and evaluate whether there has been any change in the data that supports or refutes improvement as a result.
If the recommendations don’t provide the desired result then yes, perhaps it will take more stringent, regulatory training requirements to make a noticeable difference. My suggestions, however, fill the gap between today’s purely voluntary system and the more onerous, costly and politically objectionable imposition of new regulations that even the FAA says it does not want.

As I mentioned in the LESSONS leading up to these recommendations, my suggestions are not “the” answer to reducing accidents and especially the fatal accident rate. They may be, however, part of what it will take to “move the needle” toward safer skies.

What do you think? Email Mastery.flight.training@cox.net.

Debrief: Readers write about recent FLYING LESSONS:

I received many comments last week, including several relevant to what I’ve stated above. Despite exceeding my self-imposed six-page limit last week (which correlates to unsubscribes), not a single reader chose to quit last week. And I’ve “gone long” again this time. Since you all rode it out with me—for which you have my thanks—I’ll get to the Debrief items next week, in FLYING LESSONS.

Comments? Let us know...at mastery.flight.training@cox.net.

It costs a good deal to host FLYING LESSONS Weekly. Reader donations help cover the expense of keeping FLYING LESSONS online. Be a FLYING LESSONS supporter through the secure PayPal donations button at www.mastery-flight-training.com.

Thank you, generous supporters.

Share safer skies. Forward FLYING LESSONS to a friend.


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

FLYING LESSONS is ©2014 Mastery Flight Training, Inc. For more information see www.mastery-flight-training.com, or contact mastery.flight.training@cox.net.