FLYING LESSONS for May 12, 2011

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, much-expanded *FLYING LESSONS* report each week, email "subscribe" to mastery.flight.training@cox.net.

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This week's lessons:

It's springtime, and the word "veered" is once again being featured in FAA preliminary mishap reports. Take a look at these events that have been reported by the FAA ***just this past week***:

- AIRCRAFT ON LANDING, VEERED OFF RUNWAY AND THE LANDING GEAR COLLAPSED (Commander 114)
- AIRCRAFT LANDING, VEERED OFF RUNWAY, PROPELLER GROUND STRIKE (Cessna 206)
- AIRCRAFT LANDING, UPON LANDING VEERED OFF RUNWAY (Air Tractor)
- AIRCRAFT PERFORMING TOUCH & GO OPERATIONS, UPON LANDING VEERED OFF RUNWAY INTO GRASS (Piper Cherokee)
- AIRCRAFT PERFORMING TOUCH & GO OPERATIONS, UPON LANDING VEERED OFF RUNWAY INTO GRASS (Cessna 172)
- AIRCRAFT ON TAKEOFF ROLL, VEERED OFF THE RUNWAY AND STRUCK A LIGHT (Sportstar LSA)
- AIRCRAFT ON LANDING, VEERED OFF THE RUNWAY AND THE WING STRUCK THE GROUND (Comp Air 6)
- AIRCRAFT LANDED AND GROUND LOOPED (RV8)
- AIRCRAFT LANDED AND WENT OFF THE RUNWAY (Cessna 182)

It might be the springtime winds. It might be the result of pilots who have not flown much in the past few months. It may simply be a fluke. But regardless of the cause, loss of directional control accidents represent one of the most common causes of airplane damage…which are increasingly expensive to repair, raise insurance costs for us all, and means the pilot may even be less experienced in runway directional control when the airplane is fixed and the pilot is again able to fly.

Most airplanes have a maximum demonstrated crosswind component. But experience shows the true limitation is not with the airplane, it's in the hands (and feet) of the pilot. In almost all reported cases of loss of directional control on the runway, the crosswind component is less than half the airplane's published crosswind "limitation."

Some time in the next month, make a special effort to practice crosswind takeoffs and landings. Focus on keeping the runway stripe between the main wheels at all phases of the takeoff and landing. Start with a slight crosswind component, working your way up to the airplane's maximum demonstrated crosswind component (or more) as your proficiency builds.

You may want to find a flight instructor or pilot mentor to help you expand your crosswind envelope. Definitely engage a good CFI if you're unable to maintain runway alignment, with the runway stripe between the wheels. When you're planning your next Flight Review or other

recurrent training, defer a couple instrument approaches or a review of engine management and spend some time in the traffic pattern perfecting your runway directional control.

Recall that your new crosswind personal limitation comes only after focused practice. Reduce the maximum crosswind you will accept for takeoff or landing as time passes since your last practice session.

Don't accept a takeoff or landing runway if the attempt exceeds your current crosswind limitation. Question ATC if you need to. Don't use a runway just because it's aligned with your arrival or departure, or because someone else used that runway before you. Take care to deconflict yourself with other airplanes, adhere to standard patterns so others will know where to look, and announce your intentions on the traffic advisory frequency. Exercise your pilot-in-command authority to avoid "veering" onto the accident record.

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

Debrief: Readers write about recent *FLYING LESSONS:*

Frequent Debriefer David Heberling writes about my encounter with wake turbulence reported in last week's report:

> Wake turbulence is a fact of flying. In my day job (flying Airbuses) every take off out of Phoenix has the potential to encounter wake turbulence from the preceding aircraft. This is especially true when we are all using RNAV departures. This means we all are using the same track upon initial climb. It is quite annoying to be wallowing along at V2 + 15 and hit the wake of the airplane in front of us. These are usually other Airbuses and Boeings of the same size. Their wakes will rock us pretty good and there is nothing we can do about it. RNAV departures and arrivals are all about reducing noise around airports. However, I do not think that the designers gave any thought to the possibility of wake turbulence while flying the same track. The greatest danger is right after take off and initial climb.
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> Another place we encounter wake turbulence is in cruise flight where these types of encounters were extremely rare. Now that we are flying RVSM above Flight Level 290, I have encountered it a couple of times. Now we are only 1000 feet apart flying in opposite directions. I understand that when flying the track system of the North Atlantic, pilots are allowed to offset from their track 1 or 2 nm right only from centerline. This is known as SLOP (strategic lateral offset procedure). It is designed to reduce midair collisions in cases of deviations from altitudes for any reason. I think we need something similar for our domestic system. Not only will it reduce the likelihood of midair collisions, but also wake turbulence encounters at altitude. The biggest problem is at the highest altitudes (FL 350 to FL 410). We are frequently flying at the heaviest weight for that altitude. This means that both the stall and high-speed buffet are not very far apart.
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> Wake turbulence is not just for the small plane pilot to worry about. Even the heavy iron has to respect it.

Reader Mark Briggs adds:

> A quick note here on wake turbulence. I watched a wake turbulence encounter with an aircraft flying "informal" formation. The trail aircraft needed to cross over to the opposite side of the lead aircraft and opted to do so at an altitude slightly lower than the lead aircraft. This was done, I'm sure, to allow the pilot of the trail aircraft unrestricted visibility of the lead aircraft. The effect of encountering wingtip vortices resulted in

the trail aircraft needing to use full opposite aileron to counter rolling motion induced by the vortices of the lead aircraft.

Why am I making this point? Simply because most of us seem to forget about that all-important third dimension to wingtip vortex propagation. We forget they spread out laterally AND descend. Just like the 717 flight crew in your story, we're often caught off guard when we encounter wake turbulence from an aircraft that passes above us, either laterally or in trail. This is a dangerous oversight on our part as pilots.

We also need to be cognizant of wake turbulence dangers while we're on the ground. If you happen to be in a light aircraft on the taxiway holding short of the runway when a heavier aircraft lands you may get a nasty surprise when the wingtip vortices descend upon you. I had this happen last year and I thought my airplane was going to flip! I had turned toward the incoming traffic so I could more easily keep an eye on it. I'm guessing here, but I suspect this act may have increased the rolling moment induced by the vortex encounter. Needless to say I was pretty badly shaken up by this event. It was even more surprising to me because the inbound aircraft was a Falcon tri-jet, not a heavy airliner. Am I ever glad I learned this lesson while sitting on the ground, rather than in the air!

As always, keep up the excellent work in promoting aviation safety.

Reader Leldon Locke reaches back to the recent *FLYING LESSONS* review of missed approach procedures and loss of control, perhaps linked to poor preparation for the final phase of every instrument approach—the missed approach procedure. Leldon asks:

> The loss of the family in the baron is especially tragic. Flightaware.com shows the [Beech] Baron [involved in the fatal crash that prompted the *LESSON*] as a /G. A picture of the Baron panel shows what looks like a Garmin 430? Any reasons on the flight plan or ATC live? Or other sources why he might have been flying a LOC-BC (higher minimums) instead of a GPS Approach (lower minimums)? However, it doesn't explain why a missed approach went wrong.

Thanks, Leldon. All is speculation, but Two possibilities come to mind:

1. Although the Baron the pilot was flying was /G, investigation revealed the A36 Bonanza he owned is listed as /T (transponder without mode C). I suspect that's wrong and the airplane has an altitude-reporting transponder. But I think it's more likely the airplane was /A than it was /G (if the pilot was filing /G Flightaware might have picked up on it, but there's nothing in a filed routing to necessarily prompt a change from /T to /A). Consequently, the pilot may not have been comfortable flying a GPS approach, and purposely chose the back-course approach even though it has higher minimums.
2. Have you ever listened to ATIS at a tower-controlled airport and heard it say "The GPS 31 is in use"? In my experience the recordings always indicate the *non-GPS* approach with the lowest minimums for the runway in use. Especially a fairly low-time pilot like the one involved in this accident might listen to this advisory recording and it might not even occur to him/her to request something different.

Of the two, my gut feel is that #2 is the more likely factor. Perhaps senior leadership at FAA (many of whom read *FLYING LESSONS*) would consider changing ATIS recordings to report the approach with lowest minimums available under current conditions, even if it is the GPS.

Readers, what's *your* opinion? Tell us at mastery.flight.training@cox.net.

Reader James F. Badgett adds some great insights into our discussion on the seventh most common cause of fatal general aviation accidents:

> More thoughts on inadvertent VFR into IMC mishaps:
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> I believe instructors are afraid that if we help our non-instrument rated students develop too much skill and confidence they will intentionally (and illegally) fly into IMC conditions. We do a pretty good job of convincing non-instrument rated pilots that they are going to die in a few minutes if they ever

enter a cloud on their own (a self-fulfilling prophecy). We've convinced instrument pilots that they are in for a fate worse than death if they enter a cloud without a clearance.

In his letter, David Heberling noted that even instrument rated pilots "need to fly the airplane in VFR conditions until they get the [popup] clearance." There comes a time when the risk of flying into the ground is greater that the risk of an FAA violation or a collision with another airplane. When that point is reached the pilot should climb to a safe altitude and call for assistance.

A couple years ago an instrument rated pilot lost control of his light twin shortly after takeoff from a small Wichita [Kansas]-area airport while trying to descend back below an unexpected 300-foot ceiling. A better decision would have been to climb to a safe altitude and contact ATC for vectors to a larger airport. Not long before that a promising young pilot flew a 172 into the ground between Tulsa [Oklahoma] and Wichita while attempting to stay below the clouds late at night.

All pilots should have a plan for what they will do if they ever get caught in clouds at night. My recommendation is that if you ever enter a cloud with bases below 1000 feet at night or bases below 500 feet in the daytime, you should not to attempt to descend without help.

If you enter a cloud on takeoff and you are in contact with ATC, advise them immediately. If you enter IMC conditions outside class B, C, or D airspace, continue climbing straight ahead to at least 1000 feet, and then contact ATC if you haven't broken out on top. If ATC asks if you are instrument rated, tell the truth. Explain your situation and tell them what you can do or would like to do. The best option is to fly to somewhere that has good weather. If you don't have that option, get some help executing an instrument approach. [Some] airports still offer precision radar approaches. That is an option to eliminate some of the sweat.

I don't advocate encouraging pilots to fly illegally in IMC. The best way to avoid an inadvertent IMC incident is to carefully check the weather and develop conservative personal limits. However, the weather often changes in unexpected ways.

Instructors should simulate some real-world IMC situations with their private pilot candidates [in an appropriate airplane with an instrument clearance] and show them how to survive. Don't forget the autopilot if the airplane has one. I recommend extending night dual cross-country flights beyond the100 nautical mile minimum and flying a long segment of each night cross-country in simulated instrument conditions.

I have been flying for 52 years. I got a commercial certificate and a CFI rating long before I got an instrument rating [the instrument rating has not always been required for the instructor certificate]. In all my years of flying I have never intentionally flown into IMC without an IFR clearance, but I have had two unexpected ventures into IMC - once before I got my instrument rating, and once after. Both occurred taking off from an airport - the first on an apparently clear night just west of Denver, and the second at Wichita Mid-Continent in weather that was reported by FSS and ATIS to be VFR. In both cases I was fortunate to have a co-pilot. In the Colorado incident we attempted to fly a normal traffic pattern in the clouds and broke out on downwind. In the Wichita incident we were able to get vectors back to an ILS and landed on the same runway we departed from.

I had 80 or 90 hours logged before I took my first instrument dual [this was before the Private certificate experience requirement for three hours of instrument dual]. After that I maintained a level of instrument proficiency good enough to "keep the shiny side up." Most of the airplanes I flew in my early years of flying had full sets of gyros, but their radios were marginal for serious IFR flying (typically Narco Superhomers). These airplanes did have adequate communications to practice "flying under the hood" with an instructor or safety pilot, which I did on a regular basis. A treat that one could expect at the end of any month in the late sixties was a request from ATC to practice an Airport Surveillance Radar (ASR) approach or a Precision Approach Radar (PAR) approach on return to the airport at the end of a flight.

Even before I started flying I noticed how often pilots trying to stay below the clouds (particularly at night) flew into the ground, trees, or fences. I also observed that when non-instrument rated pilots entered IMC and lasted long enough to request help from FSS or ATC, there was great urgency to get the troubled airplane away from other traffic and on the ground as soon as possible. Usually the non-instrument rated pilot and his airplane were vectored to a small airport where an accident occurred. I made up my mind that if I ever got caught in IMC that I would get assistance in going somewhere that was VMC or request vectors to a well-equipped airport. Above all, I was not going to be rushed down to the ground.

Thanks for your excellent advice, James. Workload has prevented me from adequately wrapping up the discussion of Top 10 Fatals cause #7 this week, so stay tuned to the next issue of *FLYING LESSONS.*

Reforming pilot training

As I mentioned last week, I spent two days in Atlanta as a speaker and participant in the Reforming Pilot Training symposium hosted by SAFE—the Society of Aviation and Flight Educators. Far from a boring conference spouting the same dogma we've followed for decades, the event was extremely inspiring, and resulted in a number of breakout group recommendations with assignments and deadlines to be published in the very near future. Much has been published about this conference (I'll address aspects of it in detail in future reports), but the result can be summed up best by this statement posted recently on an aviation chat line (I apologize for losing the poster's name, and will cite him/her if someone can help):

> Serious work needs to be done to teach good judgment and solid flight discipline at all levels of experience. With these the chances of making a right decision when it counts are greatly increased.

This statement exactly describes the outcome of the recent Reforming Pilot Training symposium. Education will focus on flight instructors first, because they are the ones who will teach most everyone else. Specific goals and deadlines (the "serious work") will be announced as soon as the volunteer organizers can update www.pilottrainingreform.org.

See:
www.safepilots.org
www.pilottrainingreform.org

For media reports and podcasts on the symposium, use the several links in the right column at www.pilottrainingreform.org. Bob Miller of www.overtheairwaves.com summed it up as follows:

> It was a veritable list of "who's who" in general aviation that wrapped up a three day symposium on the future of GA in Atlanta yesterday. Nearly 200 flight instructors, examiners, regulators and industry experts gathered together in the Society for Aviation and Flight Educator's (SAFE) first symposium to explore ways to drive down the accident rate and improve the quality of flight instruction. Included among those in attendance were Mel Cintron, head of the FAA's General Aviation and Commercial Division (AFS-800) and senior members of his staff who participated in all aspects of the symposium. Topping off the event was a presentation by the FAA Administrator, Randy Babbitt, who openly acknowledged the seriousness of GA's unrelenting fatal accident rate and poor flight instruction along with the FAA's commitment to work positively with the GA industry in bringing about improvements - not by regulation but by simple common sense and systematic culture change. As many Over the Airwaves readers know, I was reluctant to attend this "invitation only" event because of our industry's long tradition of holding conferences, conventions, rallies, and expos that do little other than wave flags and boast successes. My long-standing concerns about our horrible fatal accident rate and inept flight instruction were far too serious to be celebrated in typical AOPA and EAA-like event gatherings. Apparently, so did AOPA's Air Safety Foundation, EAA, and the National Association of Flight Instructors (NAFI) who chose not to attend this symposium [note—AOPA's Air Safety Institute was indeed represented by AOPA Chief Instructor JJ Greenway, who served as a breakout group facilitator—TT].
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> However, thanks to the personal urging and somewhat public intimidation by SAFE's chairman, Doug Stewart, I reluctantly boarded my T-210 and flew five hours against 60 knot headwinds to actually participate in all three days of this symposium. This turned out to be one of the most beneficial decisions I've ever made! Unlike the fanfare, flag waving celebrations, and top-down speeches reminiscent of high profile GA events, this was a hard-working several day ordeal where sleeves were rolled up and people got down to work.
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> Artfully orchestrated by Doug Stewart and his close colleagues, Bob Wright and Rich Stowell along with a virtual army of volunteers, the Atlanta SAFE symposium put GA's two most challenging problems center-stage and then invited "out-of-box thinking" to come up with solutions. And that's what happened. Five focus groups were formed and, after rigorous discussions, each came up with five solutions along with action plans and time lines for completion. Industry groups including the General Aviation Manufacturers Association (GAMA), Cessna Aircraft, GA suppliers, and the FAA's top management, along with several hundred senior and master flight instructors all removed their vested organizational and personal interests from the discussions and uncovered workable solutions to a problem that the traditional thinkers in our industry have refused to acknowledge over these past 50 years. In other words, GA's dirty little secrets were

> exposed. Somebody once said, *"A clear definition of the problem is half-way to the solution."* Well, for the first time in many decades our industry has defined the problem. Surprisingly, that problem is not the high cost of flying, or user fees, or over-regulation, or the future of avgas. The real problem is, as was so clearly identified in this symposium, our chronic, unrelenting fatal accident rate that is destroying general aviation.
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> This is directly attributable to serious weaknesses in our flight training community. Coincidentally, these are the two drums that OTA has been beating on for the past eight years. But more than anything else, the symposium demonstrated that SAFE is the organizational vehicle to bring the various vested interests in our industry together to affect meaningful reductions in our fatal accident rate by systematically removing the barriers to quality flight instruction. Congratulations to Doug and company for a job well done. As for the rest of our industry who are more concerned about membership issues than they are about flight safety, I invite them to do what I did. That is, get on the bus because it is pulling out - and the road ahead is long and narrow, but the destination, for the first time, appears in sight.

What is needed is for individual pilots to recognize there are serious risks in flying, and to actively train, plan and work to reduce risk on every flight. Unfortunately most do not, which is why I lament that the fatal accident rate probably won't change unless some things are mandated (for instance, a change in the Practical Test Standards requiring demonstration of true angle of attack awareness, not the traditional method of parroting that stalls result at the published Vso). However, the conference result is a series of action items related to ways to better teach risk evaluation without need for regulation (the FAA from the Administrator on down chanted the mantra “no new regulation” throughout the event). There are deadlines for follow-up and the conference organizers are going to issue specific assignments and responsibilities.

I think by actively participating in safety discussions here (and probably elsewhere), *FLYING LESSONS* readers are way ahead of the game. You are already thinking about things many pilots apparently never think about. Among other things, you’ll see I’ve changed the tag line on my emails and reports to reflect a greater emphasis on the true focus of the important work we all pursue.

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

Flying has risks. Choose wisely.

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2010 National FAA Safety Team Representative of the Year
2008 FAA Central Region CFI of the Year
