

FLYING LESSONS for June 11, 2009

suggested by this week's aircraft mishap reports

FLYING LESSONS uses the past week's mishap reports as the jumping-off point 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.

FLYING LESSONS is an independent product of MASTERY FLIGHT TRAINING, INC. www.thomasplurner.net

This week's lessons:

By its nature landing occurs at a high angle of attack, which results in significant drag. If the airplane is allowed to get too slow the angle of attack may be so great that adding power alone does not arrest its descent. It takes great discipline to add power *and* lower the nose to recover from an excessive rate of descent close to the ground.

The preventive measure is to maintain proper airspeed control before you find yourself in this position. If the sink rate becomes excessive it may be best to initiate a go-around—power, attitude, speed and flaps—instead of trying to salvage the landing.

Part of landing is knowing when speed and/or glidepath makes a go-around and a second attempt the wiser choice.

What can cause retractable gear to collapse during taxi? Possibilities include:

- Bending or mechanical failure of a landing gear component, especially a pushrod or rod end, from a sudden event or as the result of long-term use patterns or corrosion.
- A weak extension system that does not fully extend the landing gear.
- A weak electrical system that affects gear motor speed and does not permit complete extension from gear motor operation.
- Excessive side-load on the landing gear caused by attempting to turn at too great a speed.
- Inadvertent retraction of the landing gear by the pilot.

To prevent a gear collapse during taxi:

- Check your landing gear system thoroughly during your preflight inspection.
- Insist on a complete and expert inspection of the gear system at annual, addressing all squawks.
- Adhere to manufacturers' recommendations for inspection, overhaul or replacement of gear components on a time-in-service and/or calendar time basis.
- Occasionally time the gear extension and inspect and repair the system as necessary if the extension cycle becomes longer than normal.
- Have an expert mechanic inspect the system if you notice gear doors do not completely open or close, or for any other reason the landing gear does not look normal when on the ground.
- Run the alternate gear extension checklist as a back-up if extending the gear with a weak electrical system or slow-running motor.

- Slow to a walking pace before attempting taxi turns.
- Avoid any aircraft reconfiguration while moving. Positively identify the flap control and other switches before moving them, to prevent accidentally moving the landing gear switch.

There is no situation that warrants leaving an airplane pilotless when its engine is running. There is trepidation among many pilots of fuel injected engines about “hot start” procedures that might make someone unwilling to shut down the engine for a short period of time. Learn the proper engine start procedures and patiently apply the checklist procedures, and you’ll replace this fear with knowledgeable command of the airplane’s systems.

A successful takeoff abort requires the pilot actively monitor the takeoff from the very beginning, and quickly abort if at any point the flight does not attain specific takeoff targets. The takeoff phases to consider are the:

- **Pretakeoff phase:** Is the airplane properly configured for takeoff with all Before Takeoff checks complete?
- **Power phase.** Is/are the engine(s) generating the expected level of power?
- **Acceleration phase.** Is the aircraft accelerating as expected, to lift off in the planned distance?
- **Liftoff phase.** Does the airplane lift off at the proper speed when and where planned?
- **Initial climb phase.** Does the airplane attain the proper pitch attitude and initial rate of climb that’s expected?

If the airplane fails to achieve any of these performance targets, abort the takeoff right away, then take time to sort out the problem after you’ve safely come to a stop.

Do you not have a good idea of the expected power output, acceleration, takeoff speed and distance, and initial climb attitude, speed and rate under the existing ground and atmospheric conditions at the airplane’s current weight? Takeoff planning is the epitome of the FAA’s Practical Test Standards completion criterion that the pilot must “demonstrate mastery of the aircraft with the successful outcome of each TASK performed never seriously in doubt.” If you don’t know what to expect from your airplane on takeoff you won’t know when it’s not achieving those goals, and you’ll be caught trying to “will” the airplane to become airborne and climb when preflight calculations and active monitoring during takeoff might have permitted an early, safe abort.

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

A LITTLE TIME OFF

FLYING LESSONS will take a short hiatus while I spend some time traveling with my family. We’ll be back with more to help make your flying safer on July 2.

QUESTIONS OF THE WEEK

June Question of the Week #2

- **Have you ever had to abort a takeoff “for real”?** What was the situation? Copy and paste the question with your response to MFTsurvey@cox.net.

One randomly selected reader in June will win his/her choice of a **Mastery Flight Training hat** or the MFT DVD **Those Who Won't: 10 Tips for Avoiding Landing Gear Mishaps**. Your email address goes in the drawing once every week you respond to a question. All responses will remain confidential, but I will publish a review of the results. Like PIREPs, this works best if *everyone* participates. So take a moment to answer this week's question... then come back to read the rest of *FLYING LESSONS*.

The June Question of the Week #1 was: **Have you ever been cleared onto a runway, to take off or to land when the way was not clear?** Here are your responses:

- Yes, around 38 years ago I was cleared to land on Runway 23L (now 24L) at KCLE. Fortunately, visibility was reasonable and about a half mile out I saw an aircraft sitting on the runway near the landing threshold. As it didn't appear to be moving, I queried ATC as to the intention. ATC, of course, had me go around and apologized as apparently the other aircraft had been cleared into position and hold and then was forgotten....possibly a controller change occurred. This incident did increase my awareness that ATC also makes mistakes. More recently....perhaps three months ago.....returning to my home base of KFTW I was cleared to land on Runway 16 and was on short final when a small aircraft was told to hold short and instead taxied onto the runway in front of me. Another go around. ATC acted quickly, had me come back around, chastised the errant pilot on frequency, and thanked me after I had landed.....probably for not saying what I was thinking! This was, I am sure, logged as a runway incursion. **Vigilance pays!**
- Flying for 24 years in several states.....NO, have never been cleared onto a runway that wasn't cleared. Lucky? **I ALWAYS check right and left before entering a runway or taxiway.** Motorcycle training there!
- Yup. A year ago, flying into Bloomington IN, weather was cleared via a GPS approach to land with a small tailwind component (about 4 kts) as the approach course was aligned with my inbound heading. Cleared to land. Breaking out at about 700 AGL there was a King Air on the runway. Just about the time I initiated a go around the King Air crew, who were monitoring tower (the field was not busy and ground and tower were, fortunately, utilizing the same position), notified tower they were on the runway on which I had been cleared to land and were vacating. I pulled up, entered a downwind and landed. The controller was profusely apologetic, it appears the King Air had been cleared to cross my runway to taxi to another but had mistakenly lined up on my runway rather than merely crossing it. The controller hadn't noticed the mistake until all three of us caught it simultaneously. **I never take a clearance to do ANYTHING to mean that I can, only that I am cleared to look and do so if it is safe.** The controller is involved, I am committed.
- The incident that stands out in my memory was back in 1978 when on very short final to 31R at Dallas Love Field. I was definitely cleared for the approach, however, not yet cleared for landing. There was a Cessna 310 in position and holding, but had yet to be released for takeoff. I could feel the intensity the closer I got to the C310. My guess is...I was within a quarter mile from the threshold when the Tower Controller instructed me to begin making S-turns. I was in disbelief! I was not going to have any of that nonsense on very short final (envisioning the situation getting worse by the second)...so, at or about 150' AGL, I told the Tower Controller that I was executing an immediate go-around with a right turn out (for a right pattern). The tower controller immediately approved my go-around with the executed right turn out. He subsequently cleared the C310 for takeoff and then sequenced me for the right hand pattern and landing. That was the end of the incident. No further contact was requested of me, and I made no attempt to see what the Tower Controller had in mind by delaying the C310's takeoff. I hope there is something instructive from this shared experience.
- Yes, I was cleared to land with my instructor when a Cessna 172 was still on the runway. We aborted on a half mile final and went around.
- It happened occasionally at the Class D field where I did my primary and instrument training. These were all in good visibility and one or both of the pilots involved recognized each situation and declined the clearance. The really scary episode happened during my instrument training when I was on short final flying a practice ILS under the hood and the tower cleared a Saab 340 on downwind to land ahead of us. "A loss of separation resulted" -- my instructor had to take the controls and maneuver aggressively at about 300 agl to avoid the mid-air. He told me later that he could see the expressions on the faces of the passengers in the Saab, and they looked just as scared as he was.
- No.

- Recently, at Santa Fe NM, I was cleared for takeoff in my Citabria. As I rolled onto the runway and was about to apply full throttle I was ordered to abort takeoff and stop. A King Air had taxied past the hold short line further down the runway. While he was not actually blocking the runway at the time I would have applied full throttle and in this case I would have been several hundred feet over his head in the Citabria, the tower was pretty short with the King Air and he was sent off on his correct taxi route with his tail between his legs.
- Not that I can recall.
- As standard procedure, ATC regularly clears me to land on runways that are not clear, and advises me "Traffic will depart before your arrival." I am comfortable with this, though **I always do monitor the traffic on the runway for myself, to make sure it is clear.** But that is not what you meant. I once was on a taxiway, was cleared to cross a runway, and then an aircraft was cleared to take off from that runway. I immediately stopped dead (I hadn't reached the runway) and almost immediately thereafter another controller came on the frequency and canceled the other aircraft's takeoff clearance.

DEBRIEF: Readers discuss past *FLYING LESSONS* reports

Reader and author/safety advocate Norm Scroggins adds his considerable experience as an Air Traffic Controller to the discussion of being cleared for an unsafe runway:

Air Traffic Control has not, cannot and will not ever function without error. All the more reason for emphasis on "SITUATIONAL AWARENESS" from prop-start until you land and park. On the positive side, most errors are "adjusted" and separation is maintained. A pilot response or question often stimulates such action.

A number of factors have bearing on controller performance. Personally, I'm sensitive to the fact that the system is involved with "growing pains" in "change" created by employee retirements from the hiring "surge" of the '81 strike. Like flying, "experience" adds to controller insight and skills. Low activity ATC Facilities are a starting position for many new hires. Kudo's to the PC-12 pilot for his awareness and actions.

As a Controller, I taught Tower and Radar operations to a number of student controllers. As a Flight Instructor, I helped some of the same controllers learn to fly. I believe most remember hearing me advising (in both positions), **"Trust no one but yourself.....and remain aware of what is happening around you"**.

Before RADAR and GPS, controllers (in Centers and Terminal Approach Control) had to develop a mental picture of lateral and vertical separation of flights in the airspace. Radar, GPS, and Convergence Alert has relieved but not eliminated such need for the controllernor the pilot. "SITUATIONAL AWARENESS" was a buzz phrase first emphasized in FAA's Accident Prevention program; two simple words of instruction which do influence safety both in the air and on the ground.

Referencing last week's *FLYING LESSON* comparing the effects of fatigue to intoxication, reader and airline safety director Alan Davis writes:

What a coincidence - I just sent out some information today to my stations and management teams and then I opened your e-mail! Thought you would be interested is this.

Alan's message to his management teams, which he forwards for our benefit, includes this (edited very slightly for the context of *FLYING LESSONS*):

Research supports what you've known all along: pilots who are stressed or fatigued pose a greater safety risk than those who are not. No surprise. But get this, recent studies show that tired and overly-stressed pilots are as dangerous as those who are legally intoxicated. That's a scary thought.

We know that there is stress in flying - especially when things don't run on schedule or other issues crop up. While "some stress" can be good - like the stress that pushes an athlete to perform - most stress plus fatigue can have a very negative effect on performance. There is also a lot of stress from the outside - both economic and job related - with which many may be dealing, along with our issues of staffing, hours, and productivity.

There is no easy answer for this, unfortunately, since we cannot control the "outside forces" that may be causing stress, fatigue or both. What we CAN do it to make sure we know we must always "Leave the baggage at the door - you can pick it up on the way out when the work is done." Our environment is difficult and can be dangerous - both to us and to the aircraft - and we MUST be focused on what we do at all times.

We don't need people who are "walking intoxicated" from fatigue - they are a danger to our operations.

Questions? Comments? Send your insights to 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



FLYING LESSONS is ©2009 Mastery Flight Training, Inc. Copyright holder provides permission for FLYING LESSONS to be posted on FAASafety.gov. For more information see www.thomaspturner.net , or contact mastery.flight.training@cox.net or your FAASTeam representative.