FLYING LESSONS for September 1, 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.

If you wish to receive the expanded weekly *FLYING LESSONS* report emailed directly to you, email "subscribe" to mastery.flight.training@cox.net.

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FLYING LESSONS comes out early this week because of my schedule at the 2009 American Bonanza Society Convention in Salt Lake City, Utah Sept. 2-5. I hope to see many of my Beech-owning readers there!

This week's lessons:

In many airplanes you cannot visually confirm fuel level unless the tanks are very nearly full. This is more common in low-wing airplanes, but any aircraft with a high wing dihedral will have this characteristic as fuel tends to flow toward the inboard, low end of the tank. Consequently you must often rely on fuel gauges, a fuel totalizer, fuel billing records and/or personal observation of the fueling operation to establish the fuel level.

Running short of fuel in flight suggests these possible scenarios:

In-flight fuel leak:

- Fuel may vent overboard through loose fuel caps, or through cracks in fuel cap O-rings or plunger-type seals.
- Fuel may be drawn out through leaking sump drains [who has never seen a drain that drips after testing the fuel? In flight a drip can turn into a stream].

Occasionally glance at the fuel caps to look for any sign of leaking. I learned (the hard way) to check just after I've established cruise climb. Look at the trailing edge of the wing behind the filler ports and aft of the fuel sump drains for fuel droplets. Fuel drips tend to collect and may even be seen blowing span-wise on the aft edge of flaps, wings or ailerons.

Unexpected fuel burn:

- Pilots often think of endurance based solely on cruise fuel flow expectations. Fuel flow may be significantly higher in climb, however, and a long climb may eat into your planned fuel reserves.
- In some airplanes, generally larger twin-engine types of the 1960s and '70s the cockpit fuel flow is indicated in pounds per hour, not gallons per hour. The pilot may not turn the panel indication into a visualized rate of fuel burn during climb.
- If you use a power setting that is not "normal" for you, and/or you do not lean the mixture the same way or as promptly as you usually do, high fuel burn may continue longer than anticipated.

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Over-reliance on a fuel totalizer.

- We've seen before when a plane runs out of fuel after the pilot inputs fuel incorrectly into a totalizer, or inputs fuel he/she *thinks* was added but for some reason line service didn't pump the gas.
- Properly calibrated fuel totalizers are a tremendous management tool, but you should occasionally top off the tanks [when conditions make it safe to do so] to restart the totalizer's calibration from a known, full level.
- Write in a "Fuel Totalizer….UPDATE" or similar step on your Before Start checklist, and use it diligently. Who among us has never forgotten to update the totalizer, added fuel in the run-up area after taxiing out, or input an *approximate* value? All these little inaccuracies are cumulative and can be substantial over time.
- Once you introduce *any* inaccuracy you can't depend on the totalizer for near-minimums fuel planning, until you recalibrate by filling the tanks and resetting the totalizer at full.

In all cases, crosscheck the cockpit fuel gauges regularly in flight to see the indicated level fits your expectations based on initial fuel level and fuel burned. If there's a discrepancy between expectation and indication, get on the ground at the first practicable airport until you add fuel or by some other means directly observe the amount of fuel remaining on board.

Take a look at this video that appeared in the August 31 AVweb *AvFlash* e-newsletter:

www.avweb.com/eletter/archives/avflash/1450-full.html#201081

Luckily no one was seriously hurt. This video gives us a rare insider's look at an actual aircraft mishap in progress. The FAA preliminary report (below) on this mishap is not very telling, and as yet there is no NTSB preliminary report posted.

IDENTIFICATION
Regis#: UNK Make/Model: D25 Description: NEW STANDARD D25
Date: 07/26/2009 Time: 2040
Event Type: Incident Highest Injury: None Mid Air: N Missing: N Damage: Unknown

LOCATION
City: RHINEBECK State: NY Country: US

DESCRIPTION
REGISTRATION UNKNOWN, NEW STANDARD D25 AIRCRAFT, ON TAKEOFF, WENT OFF THE RUNWAY, OLD RHINEBECK AIRPORT, RHINEBECK, NY

INJURY DATA Total Fatal: 0
Crew: 1 Fat: 0 Ser: 0 Min: 0 Unk:
Pass: 0 Fat: 0 Ser: 0 Min: 0 Unk:
Grnd: Fat: 0 Ser: 0 Min: 0 Unk:

OTHER DATA
Activity: Unknown Phase: Take-off Operation: OTHER

FAA FSDO: TETERBORO, NJ (EA25) Entry date: 07/28/2009

This analysis is not meant to assign blame or reflect on this pilot in any way, but to learn some valuable *FLYING LESSONS* from this unique documentation:

It appears the for-hire sightseeing flight made its initial run down the grass runway and lifted off for a short distance, gaining little altitude. One of the passengers is heard to say "That wasn't much of a ride" on the recording, supporting what the video appears to show. During the time apparently aloft the video seems to show a change in the propeller speed, although that could be

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a function of digital recording and not reflect reality. Air noise is by far the greatest sound and I cannot discern a change in engine noise on the soundtrack.

It might be this hop was intention as the pilot expedited a back-taxi down the long grass strip, or it's possible the airplane did not lift off at all. But it sure looks as though there was an attempt at takeoff and a takeoff abort.

The pilot then turned the large, vintage biplane around, very close to trees at the end of the runway, and applied power for a (second?) takeoff in the opposite direction. The airplane lifted off, a little higher than before, but quickly settled down and slightly to the left, impacting trees and rocky terrain. The airplane was significantly damaged but it appears the only injury was a minor cut to the pilot. He and at least two passengers lingered around the wreck taking video and discussing what happened.

Two *FLYING LESSONS* suggested by the video:

1. **If you abort a takeoff,** do not attempt a second takeoff unless you can positively identify the cause of the abort, and correct it from the pilot's seat. Lack of power on takeoff probably indicates an engine issue that is only like to get worse on subsequent tries, or once you've managed to make it into the air. Fuel problem? Carburetor ice? Cracked cylinders? Other issues? Unless you know the problem results from improper configuration or cockpit set-up (for example, attempting takeoff with the mixture or carburetor heat improperly set) and can correct your mistake, it's best to taxi in, shut down, and take a good look with a skilled mechanic.
2. **If you are in a crash,** evacuate the airplane and get well away. Fire and explosion are the biggest hazards of a survivable impact. You can't tell the extent of fluid leaks or electrical arcing while hovering around the wreckage, especially while you're potentially injured or in shock. *FLYING LESSONS* knows of two cases where an unseen spark smoldered for 20 minutes or more after a seemingly innocuous gear-up landing, only to erupt into flame that destroyed the airplane—so get away, and stay away. Pilots, be ready to get your passengers (and yourself) out and away from the hazards of what used to be an airplane. Don't try to recover personal items or baggage until after the fire department has cleared the scene.

Remember, the facts are not in on this particular mishap, and reality may differ significantly from the points of this discussion. As always with *FLYING LESSONS*, however, we use actual mishap reports to consider what *might* happen in similar situations, so we can anticipant scenarios and be ready for emergencies—including detecting hints of when possible scenarios are developing in time to avoid emergencies in the first place.

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

DEBRIEF: Readers write about *FLYING LESSONS*

Instructor and designated examiner Waldo Anderson writes about a recent *FLYING LESSON* concerning side-stepping to the right during a go-around:

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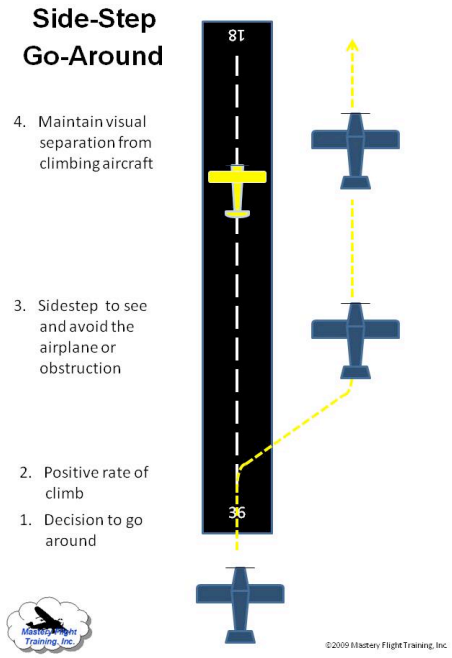

Tom: In reference to your item in 8-20-2009 on [the side-step] go-around maneuver: Private Pilot PTS [Practical Test Standards] IV - L. Go-Around. 6. [calls for the examiner to evaluate whether the applicant] "Maneuvers to the side of the runway/landing area to clear and avoid conflicting traffic." It is the same in Commercial Pilot PTS.

To the best of my knowledge this was put in the PTS as result of accident in California when an aircraft was cleared for take-off but delayed take off, and incoming traffic was then instructed to go-around and did not side step, which resulted in mid-air. My recollection is that was approximately 15 years ago. I had a discussion some time ago about Practical Test Standards and [an] FAA person indicated NTSB's recommendation was that pilots be tested on this maneuver.

Thank you very much, Waldo. That change would have come after many readers earned their pilot certificate. This appears to be another of those bits of "old-time flying wisdom" that was apparently lost to most, then re-discovered after its reason for being tragically reappeared. My instructors taught it to me in the early 1980s, but we rarely see it anymore.

A reader writes:

Thanks for another well-written and valuable *Flying Lessons*. I always read them thoroughly, and incorporate the information into my flying. --Craig Johnston, 777 Captain, S35 Bonanza Owner

Do you have a question or comment? Email me at 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

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