FLYING LESSONS for July 1, 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.

If you wish to receive the free, expanded *FLYING LESSONS* report each week, email "subscribe" to mastery.flight.training@cox.net.

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

This week's lessons:

Two tragedies this week remind us of the wisdom of letting someone know your flying plans, even for local flying. In one event two pilots were overdue during a lunch fly-out at a pilot's gathering; their fellow pilots and their wives had nowhere to look and did not know whom to contact for information when the plane didn't return on time. In the other, a plane was lost on a VFR trip over mountainous terrain. A search didn't even begin until the second day, when an out-of-town brother to the pilot happened to discover the aircraft was overdue, long past the first few hours that are often critical to survival of occupants of a downed aircraft.

Perhaps it is time to revisit the idea of filing and activating VFR flight plans to speed up rescue initiation. VFR Flight Following is a superb additional resource and is in many ways superior to a VFR flight plan, but Flight Following is based on controller workload and is not always available; and is dependent on radar coverage, which is generally not available at normally aspirated altitudes in mountainous terrain.

History shows that Emergency Locator Beacons (ELTs) are not a reliable trigger for first-response accident notification. The first few hours after a crash are critical to survival, with successful rescue extremely unlikely if a full day goes by before a search begins. It would be incredibly tragic to survive a crash only to perish from injuries or the elements for lack of a few minutes filing and activating a VFR flight plan, or at least letting trusted family or friends know your estimated departure time, route and estimated time of arrival, with instructions on who to contact to instigate a search if you're overdue.

From the NTSB: "*According to the commercial pilot [receiving instruction], the flight instructor in the right seat was administering an instrument proficiency check [in the multiengine aircraft]. After the first hour of [flight] instruction, the flight instructor asked the pilot if he wanted to complete the check that day and the pilot responded yes. A second flight segment was initiated, and the pilot commenced the takeoff while the flight instructor controlled the throttles. The pilot reported that after liftoff, about 200 feet above the ground, the flight instructor retarded the left throttle at 85 to 88 knots. The airplane began to veer to the left, and the pilot reached for the left throttle to add power; however, the flight instructor's hands remained on the throttles. The pilot recalled a visible split in the throttle positions. The airplane continued to roll to the left and the pilot was able to level the wings just prior to the impact with trees. After ground impact...the cockpit, cabin, and left wing were nearly consumed by fire." The CFI died as a result of this maneuver and instructional technique, and the pilot received "serious" injuries including massive burns.*

It's often said that the cockpit makes a lousy classroom. Although this usually implies that noise, distractions and operational needs make instruction in new techniques difficult in an airplane, it also addresses safety of flight considerations.

There is a place for engine failure on takeoff training, and in my opinion that place is a flight training device (FTD) or simulator. Any simulation of the scenario conducted in the actual airplane should be done at altitude, only after thorough instructor/student briefing and never done as a surprise, with room to recover using VMC techniques at the very first sign of less-than-perfect student execution.

Instructors, strongly consider the differences between "guarding the throttles" and preventing the Pilot Receiving Instruction (PRI) to use them as appropriate for the circumstances--the difference is far more than just semantics.

PRIs, don't take off on a dual instructional mission in a twin-engine airplane without completely covering the conduct of engine failure scenarios with your instructor--if he/she does not initiate the discussion and thoroughly describe exactly how the demonstration, practice or evaluation will be handled, it's your responsibility to ensure he/she includes this in the preflight brief.

At least in the cited example, a complete understanding of roles and responsibilities, and a reminder to the MEI of what is (and is not) appropriate for presentation and conduct of training maneuvers, would probably have saved the instructor's life, and prevented what may be an inalterable change in the quality of life for the PRI as well.

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

Debrief: Readers write about recent *FLYING LESSONS*

Reader Edward Dopler asks about recent *FLYING LESSONS* on turbulent air penetration speed:

> My POH tells me what my maneuvering airspeed is at [maximum] gross weight only. Is there some rule of thumb that would allow me to calculate Va at any gross weight? And can you provide me with formulas to calculate Va with changes in gross weight.

I replied: "Although V_A is defined only at maximum gross weight, the safety margin afforded does in fact vary with reductions in airplane weight. Barring manufacturer's guidance reduce V_A by 2% for every 100 pounds below maximum gross weight, in most light airplanes." The reader replied:

> Hi Tom, Thanks for the rule and I really appreciate your most rapid response.

You're welcome, Ed. Reader Alan Davis provides more insight:

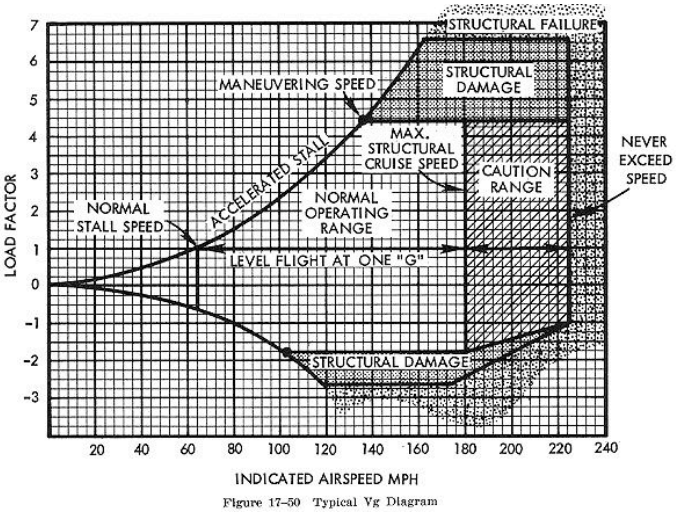

Figure 17-50 Typical Vg Diagram

Here is another one to think about, beyond the addition of lift devices to the wing, when figuring out Turbulence Penetration speeds. If you take a good look and any of the generic Vg diagrams (since you normally can't get one that is aircraft specific), you will note that Va is at the point where the positive limit load line meets the accelerated stall line (curve). That is generally known. But if you also look at the lower half of the chart, you will find that the negative limit load line similarly intersects the accelerated stall line (curve). Though it is not "officially" named anywhere, and almost no one is aware or talks about it, that is, effectively, a "negative Va" - and it is much slower, in all cases, than the Va for the positive

location and much less G load. Since we don't normally have only positive turbulence (i.e. positive G loads - movement in an upward direction) when we encounter turbulence - at least I never have - we need to slow down even more than published Va to truly be safe! And, everyone need to remember that for most aircraft…there is only a Va published for max gross, and both speeds decrease with lesser weights. The easy way to think of it is that "what goes up, must come down" so plan for both positive and negative pressures on the aircraft. If anyone is interested in more detail, there is a PowerPoint presentation that I did, and also a word document version, in the S.A.F.E. [Society for Aviation and Flight Educators] library, and S.A.F.E. members can go there and get much more detail.

See www.safepilots.org/

Reader George Boney writes:

> I read Flying Lessons and I enjoy your column, plus I always learn something. A small contribution to the "engine failure-land straight ahead" discussion a few weeks ago. I flew with a very experienced (+10k) pilot once whose rule was "10 degrees per 100 ft", i.e. if he was 200 ft off the deck, he could turn 20 degrees left or right to chose an arrival spot (we are not saying whether it will be a landing or crash). Now, I am not sure of the ratio, but I like the concept - for every x feet of altitude, my 'choice' cone grows by y degrees. And when I fly, I look out the windshield and 'watch' that cone expand as I gain altitude. As always, thanks for your great work.

And thank you, George. The cone of options for a given altitude will not be symmetrical—you can go farther with a tailwind, less far into a headwind. But the idea of constantly considering your available options is prudent.

All about cylinders

FLYING LESSONS reader Mike Busch of www.savvyaviator.com will host a free webinar, "All About Cylinders," on Wednesday, July 7th starting at 6pm Pacific, 8pm Central, 9pm Eastern U.S. time. The webinar will start of with a presentation lasting roughly 30 minutes, followed by 30 minutes of questions and answers. For more information and to pre-register for the webinar see www.savvymx.com/index.php/webinar.

Hot topic: Ice

The FAA is planning to "reinvigorate pilot education efforts regarding icing, starting with the corporate fixed-wing segment but eventually branching out to cover all segments of the pilot population," according to Roger Mauro, senior research scientist at the Decision Science Research Institute. To support this effort NASA and the FAA have contracted Decision Research to gather data through a "completely anonymous" survey that will help drive development of new ice-related training programs. Participation is limited to professional pilots flying Part 121, Part 135 and/or Part 91k (fractional) and corporate Part 91 operations. If you fly one of the requested types of operation you're invited to take the survey.

See:
www.decisionresearch.org/
www.decisionresearch.org/icing/

Three from the FAA

New taxi clearance. Ground controllers no longer use the term "taxi to" when clearing aircraft to taxi to a takeoff runway. Controllers must issue specific clearance to pilots crossing *any* runway, even if it's closed, along the taxi route. Multiple runway crossing clearances may be issued *only* if the runway centerlines of the two runways are no more than 1000 feet apart. Airplanes may be cleared to taxi "to parking" or "to the ramp" after landing, but this no longer clears the pilot to taxi across runways, and specific clearances to cross each runway are still required. For full details see FAA Notice N JO 7110.528.

See www.faa.gov/documentLibrary/media/Notice/N7110.528.pdf

"Glass cockpit" failures. According to a new Information for Operators (InFO) letter, "the cockpits of light aircraft have undergone a transition from conventional flight instruments to integrated, computerized displays commonly referred to as glass cockpits. The introduction of this advanced technology…has brought with it a new set of potential safety concerns, including

equipment design and operation; pilot performance and training; and new accident investigation techniques. A recent NTSB study found that introduction of glass cockpit displays has not yet resulted in the anticipated improvement in safety when compared to similar aircraft with conventional instruments." NTSB "found that multiple instances of glass cockpit avionics malfunctions were not reported to the FAA, and did not result in a service difficulty reports. FAA is recommending…aircraft operators and maintenance technicians should voluntarily report equipment malfunctions or failures, abnormal operations, and other safety issues associated with glass cockpit display systems on the FAA's Service Difficulty Reporting site. For details read InFO 10007.

See www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/info/all_infos/media/2010/InFO10007.pdf

Concentric avionics controls. FAA has published an InFO reminding pilots to double-check all avionics settings when using systems (like many GPSs) that employ concentric tuning controls ("big knob/little knob" arrangements). Read InFO 10008 for details.

See www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/info/all_infos/media/2010/InFO10008.pdf

It's almost time…

…to finalize plans for your flight to Oshkosh. There's still time, however, to prepare to ensure your safe arrival. Continuing the annual *FLYING LESSONS* seven-part series on Arriving at AirVenture, this week let's look at Part 4: Spot Landings, and Part 5: Don't Go It Alone.

See
www.aero-news.net/news/featurestories.cfm?ContentBlockID=707D7B2B-8F23-477C-B509-82922D0727E9&Dynamic=1
www.aero-news.net/news/featurestories.cfm?ContentBlockID=232F926C-88EE-450D-B5B1-098AB96F0F74&Dynamic=1

Recapping the earlier articles:

Part 1: Know the NOTAM (note: the correct link for this year's EAA NOTAM is here.)
Part 2: Have a Back-up; Fill 'er Up
Part 3: Airspeed Control

See also:
www.aero-news.net/news/featurestories.cfm?ContentBlockID=E1FEE301-00FA-4BC9-9B2A-A114EDAA14D6&Dynamic=1
www.airventure.org/flying/2010_NOTAM.pdf
www.aero-news.net/news/featurestories.cfm?ContentBlockID=11B5B140-1161-457B-BE89-3AA633B059B8&Dynamic=1
www.aero-news.net/news/genav.cfm?ContentBlockID=2AA8E421-F426-4450-A28A-E6A665891317&Dynamic=1

Arrive safely; I hope to see you there!

Question of the Week

This week's question:

> **Do you routinely file flight plans, even for VFR trips, or at least let someone on the ground know your plans and how to start a search if you're overdue? What value do you see in filing a VFR flight plan?** Tell us at mftsurvey@cox.net**.**

No one responded to last week's question, which was:

> **How did you select the instructor you used when you checked out in the airplane you currently fly? Is he/she an expert in the specific type? What type of airplane is it?**

We'll leave it open for any belated responses.

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