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## **FLYING LESSONS for September 11, 2008**

suggested by this week's 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.

Feel free to forward this message for the purpose of pilot education. *FLYING LESSONS* is also available in PDF through a link in the left column at [www.thomaspturner.net](http://www.thomaspturner.net).

**FLYING LESSONS IS AN INDEPENDENT PRODUCT OF MASTERY FLIGHT TRAINING, INC.**

### ***This week's lessons:***

**Proper airspeed control** is vital to a smooth touchdown. Hard landings result from too little airspeed, while bounced landings and pilot-induced oscillations are symptoms of too great a landing speed. Being on speed on short final is your best predictor of a smooth, safe touchdown. If not on the proper airspeed when crossing the runway threshold, go around and try again (unless you have a very long runway and have run to recover and still land).

**It's natural for student pilots** to make "hard" landings as they learn, but part of the instructor's responsibility is to anticipate the hard landing, coach the student as long as the touchdown is salvageable, intercede vocally to prompt the student to act as needed, and take over the controls if the student is not able to correct the condition in time.

**Pilot-induced oscillation (PIO)** results from attempting to land at too great a speed, attempting to "force" the airplane onto the runway, and/or failing to maintain sufficient control pressure after touchdown.

**All too often pilots "give up"** once the airplane is on the ground, forgetting the need to continue with positive control inputs. Escape from PIO by applying firm back pressure to dampen out the oscillations. Sometimes a brief, minor burst of power will help, if applied carefully

**In this regard flight instruction is an art**, the instructor permitting the student to go *just far enough* to glean maximum learning from a situation, without allowing the scenario to deteriorate to the point damage or injury occurs.

**In the final analysis** once in the aircraft flight instructors must be *safety officers* first, and teachers-of-flight second. This in part explains the need for ground instruction and proper briefing before every instructional flight, so the student has some idea of what to expect and the instructor therefore can concentrate on overall safety-of-flight while still providing instruction.

**Monitoring fuel load is vital**, with proper planning to permit descent and landing on a tank with sufficient fuel.

**Auxiliary fuel tanks are commonly placarded** against use except in straight-and-level flight. Although commonly fuel may be drawn from “aux tanks” while climbing, descending or maneuvering gently (if great care is paid to control coordination), in practice the prohibition against attempted takeoff or landing on auxiliary fuel tanks has been proven again and again in mishap reports.

**Wind shear encounters in light airplanes** (using the FAA’s definition of “light” as meaning a maximum weight of 12,500 pounds or less) are generally less hazardous than in heavy, turbine airplanes, because lighter airplanes have less inertia to overcome when turning a sudden descent into a climb, and (at least with older engines) turbine powerplants do not spool up to full power as quickly as piston engines. However, there is still a danger regardless of the size and weight of the airplane.

**Most aviation texts** warn pilots to avoid flying within 20 miles of an active storm cell. This is usually explained in the context of avoiding heavy turbulence and the potential for encountering dangerous hail in cruise—conditions I know several *FLYING LESSONS* readers can address from personal experience (send your experiences to [mastery.flight.training@cox.net](mailto:mastery.flight.training@cox.net)). It may be even more important, however, to avoid taking off or landing within 20 miles of an active storm cell. Low-level wind shear along a gust front can extend this far from the storm; the departing or arriving airplane that encounters wind shear does so at a low airspeed and a high angle of attack, with little altitude to trade for speed if a shear results in an excessive angle of attack.

**Shoulder harnesses** continue to be potential lifesavers. Many times we read when even minor impact forces severely injure—or even kill—front-seat occupants who are not using shoulder harnesses. I can cite cases where a pilot successfully ditches in water, most commonly after engine failure, only to suffer head injuries and drown after a successful ditching. If shoulder harnesses are installed, use them. If not, and you have any say in what’s installed in the airplane you fly, **strongly** consider adding these most important lifesaving devices.

Questions? Comments? Send me a note at [mastery.flight.training@cox.net](mailto:mastery.flight.training@cox.net).

## **DEBRIEF**—Reader comment on past *FLYING LESSONS*

**Wake turbulence:** Three recently died in a high-profile loss of control while attempting to intercept the localizer at Boston, Massachusetts. That the flight was a volunteer “mission” transporting a medical patient and a third aircraft occupant brought great publicity to this tragic event. Speculation to date has centered on pilot issues including cockpit workload. *FLYING LESSONS* reader Joe Lemanski has studied the available record and has another theory—that the flight was brought down by wake turbulence from larger aircraft sharing the crowded Logan Approach sky. Review Joe’s support for his theory, including ATC audio of the actual event, in [this report](#).

See [www.thomaspturner.net/G35%20Wake%20turbulence.pdf](http://www.thomaspturner.net/G35%20Wake%20turbulence.pdf)

**Engine failure in IMC:** Regarding a recent *FLYING LESSON* concerning engine failures in single-engine IMC, reader, instructor, tireless safety advocate and current president of the Australian Bonanza Society Jock Folan writes:

Tom,

An interesting comment re Engine Failure in IMC with a single engine aircraft and knowing the terrain below weather. I do not hold a Command Instrument Rating (CIR), I do maintain an Australian Private Instrument Rating (Private Instrument Flight Rules (PIFR). As far as I am aware the Australian CIR does not address the issue of an Engine Failure in a Single Engine aircraft in IMC, however it certainly is an element in the PIFR training that I received. Part of that training also addressed the issue of being aware of the terrain below the weather.

Although I did not have an engine failure I did encounter rapid and significant icing where I could not maintain altitude and I did have to continue a descent below LSALT [Lowest Safe Altitude for a route segment, roughly equivalent to the U.S.' Minimum Obstacle Clearance Altitude, or MOCA—tt] while IMC even though the temperature became favourable I could not arrest the descent or clear the ice quickly enough. The PIFR engine failure training kicked in and I went against ATC direction and turned to parallel the known terrain (ridges) and scaled the GPS map down to show roads and rivers. I then adjusted course to match these. I eventually became visual far below the surrounding terrain where I was able to maintain height until clearing most of the ice. Getting out of the valley is another story but I do attribute my actions to the PIFR training, these actions have allowed me to comment on it now.

We do not have to same weather or high terrain that you do [in the U.S.], however I am now far more careful and cognisant of terrain in my flight planning, particularly during our winter months.

Sounds like evidence of good training, and good application of that training to a somewhat different scenario than envisioned in the standards—a high level of learning. I'm sure this experience has changed the way you approach flight near or above suspected icing conditions also. Jock continues:

If I may also comment on gear related mishaps, I notice that a significant number occur when on the ground. I agree with the comments about ANR headsets and I will not use them. However even standard headsets do muffle a certain amount of noise and as I get older I do have difficulty in hearing warning horns in the aircraft so I recently installed a small locally designed system that assigned different tones to stall, U/C or Electrical Power loss and routes these though to the headsets. I do utilise procedure and discipline to ensure that I do extend the[ undercarriage], however if I do ever [attempt to] retract the U/C on the ground inadvertently, then I hope that the **immediate** alarm though my headset will cause me to reverse the selection before the U/C does collapse.

Regards,  
Jock Folan  
President, Australian Bonanza Society

**Popping up through ice:** Regarding a recent *FLYING LESSON*, reader Bill Caton forwarded a note from his mentor, an “instrument flight instructor, former Chief FAA of DFW and all towers in this area...former AOPA rep..and on and on...and an [upcoming] student” of Mastery Flight Training:

THIS IS VERY TIMELY..... [I'm] working on reconstruction of an event earlier this year in West Virginia....[A] guy tried to fly below [ice] in a Mooney...got into the clouds to clear hills @ minimum terrain clearance...(6,200 ft) [and] started icing. [Another] pilot told him he could top it a t 8,000 [ft] .....but he didn't make it and left a big hole in the ground.

Glad to be of help, sir, as you sort out this tragedy. I look forward to learning more about flying with you.

## DVD from MFT!

You know you've heard it: there are those who have, and those who *will* have a gear up landing. Become one of [Those Who Won't](#) with this DVD detailing **10 tips for avoiding landing gear-related mishaps**. By Master CFI Thomas P. Turner, the 15-minute DVD is the result of over six years of studying why pilots make landing-gear mistakes. Great for airport, flying club and FAA Team safety meetings. \$25 plus shipping and handling [online](#) or by calling 316-945-1700.

See <https://secure5.webfirst.com/ABS/Store/#ThoseWhoWont>

## For piston Beech pilots

**The September 11, 2008 Weekly Accident Update is now posted at [www.thomaspturner.net](http://www.thomaspturner.net)**, including these reports:

- A V35A entered pilot-induced oscillation on landing....
- A C23 landed hard during an instructional flight....
- An F33A made a successful landing on a highway following engine failure....
- A G35 suffered fuel starvation and ditched in a river....
- An F33A was damaged while being repositioned on the ground....

There is also an update on the August 6<sup>th</sup> C23 hard landing during flight instruction at Augusta, KS.

**For more information, commentary and analysis see the Beech Weekly Accident Update link at [www.thomaspturner.net](http://www.thomaspturner.net).**

See [www.thomaspturner.net/WAU\\_2008.htm](http://www.thomaspturner.net/WAU_2008.htm)

## *Fly safe, and have fun!*

I welcome your comments and suggestions. Contact [Mastery Flight Training, Inc.](#)

If someone has forwarded this message to you and you want to have *FLYING LESSONS* sent directly to you each week, [tell me](#).

If you received this message directly (as opposed to through a digest or chat room) and wish to be removed from the *FLYING LESSONS* list, [tell me](#).

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Holder of an ATP certificate with instructor, CFII and MEI ratings, a Masters Degree in Aviation Safety, and **2008 FAA Central Region CFI of the Year**, Master CFI Thomas P. Turner ([resume](#)) has been Lead Instructor for FlightSafety International's Bonanza pilot training program at the Beechcraft factory; production test pilot for engine modifications; aviation insurance underwriter; corporate pilot and safety expert; Captain in the United States Air Force; and contract course developer for Embry-Riddle Aeronautical University. He is now the Manager of Technical Services for the [American Bonanza Society](#). With over 3500 hours logged, including more than 2200 as an instructor, Tom writes, lectures and instructs extensively from his home at THE AIR CAPITAL--Wichita, Kansas.



See [www.thomaspturner.net/TTweb.2008.0619/Resume.htm](http://www.thomaspturner.net/TTweb.2008.0619/Resume.htm)