

# **FLYING LESSONS** for February 3, 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, expanded *FLYING LESSONS* report each week, email "subscribe" to [mastery.flight.training@cox.net](mailto:mastery.flight.training@cox.net).**

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

**Oh, the things we do** to get home. We're at our most vulnerable when we're faced with a go/no-go decision away from home, where it's inconvenient and schedule-busting to wait it out when otherwise we'd make an easy "no-go" decision.

**Virtually every pilot knows** the term "get-home-it is". We usually attribute it as a cause when the pilot presses into adverse weather, busts altitudes (intentionally or otherwise), pushes on well after fatigue should have made him/her call it a day, or tries shortcuts like scud running or contact approaches when conditions aren't *quite* good enough.

**But symptoms of get-home-itis can appear even before takeoff.** Take the pilot who tries to hand-prop his or her airplane because the battery ran down, or the starter has failed. A dead battery may not recharge in flight, even if the alternator or generator is working, so there is no reserve in the event of a charging system failure, and no power-spike protection for valuable and sensitive avionics. A failed starter may hang up on the accessory case or the engine's crankshaft, creating imbalance or resistance that can cause serious, inflight engine damage.

**Hand-propping an airplane** is safe when done correctly, and with the right equipment. But hand-propping is something of a lost art; it appears frequently in accident records, often totaling the airplane (and sometimes others) when the propped airplane gets away from the pilot and collides with whatever is in front of it. Hand-propping was never meant as a way to bypass improperly operating airplane systems.

**Most pilots think of the so-called "impossible turn"** as describing the hazards of trying to return to the airport if a single-engine airplane's powerplant fails immediately after takeoff.

**But we don't usually think about twins** when we consider the need to continue straight ahead in almost all cases after engine failure right after takeoff. But most light twins will get, at best, a 200- 300-foot-per-minute (fpm) climb rate on one engine, at sea level and anywhere near maximum takeoff weight. Think about what that means. At 300 fpm it'll take a little over *three minutes* to get to pattern altitude.

**But to climb at all** with one prop feathered, you need to go straight ahead, or very close to it. In as little as a half-standard-rate turn (less than 10 degrees bank at these speeds) and flying on a single engine, most light twins will *lose* about 300 to 400 fpm climb rate compared to what they'll get climbing straight ahead. In other words, begin to turn, and you begin to go down.

**At "blue line" airspeed** (best airspeed for single-engine performance, a function of angle of attack and aerodynamic drag) you'll get roughly a mile-and-a-half a minute ground speed during this climb, given the typical 90 to 115 knot "blue line" speed of a light twin.

**Lose one of two engines on takeoff and do *everything* right, then,** and you

need to climb straight ahead nearly five miles before trying to turn back to the field. Try to turn back sooner and you'll find yourself descending into the ground...with the temptation to pull back on the yoke as you sink, making engine-out loss of control more likely. Many have died after a propeller is feathered, while trying to return too quickly to the departure runway.

**Just like the so-called "impossible turn"** back to the runway when faced with an engine failure on takeoff in a single, so too we have an "impossible turn" scenario with an engine failure on takeoff in a twin. Train well for this most critical failure in a twin, and make sure you have the discipline to climb to a safe altitude, straight ahead, if you lose one of your engines on takeoff.

Comments? Questions? Tell us what you think at [mastery.flight.training@cox.net](mailto:mastery.flight.training@cox.net).



In late December *FLYING LESSONS* began an ambitious project to look at the Top 10 causes of fatal general aviation accidents as determined by the U.S. National Transportation Safety Board and reported by the Federal Aviation Administration. We vowed to look at one cause category per month, and develop lesson plans to teach avoidance of the most common deadly threats.

In January we began with the 10<sup>th</sup> most common cause, Low Altitude Maneuvering/Not Controlled Flight into Terrain. Several *FLYING LESSONS* readers volunteered experiences, opinions and ideas for avoiding the LA-NCFIT threat. As promised, *FLYING LESSONS* has identified the trends in this accident cause category, and now submits sample lesson plans you might include in pilot certification (checkride preparation), recurrent and Flight Review (or international equivalent) training.

If we're successful at getting these lessons across, so that our students and fellow pilots take their advice to heart, we might be able to significantly reduce incidents of the 10<sup>th</sup> most common reason pilots (and their passengers) die in GA airplanes.

- LESSON Plan for Surviving Cause #10: [Categorical Outlook Flying](#)
- LESSON Plan for Surviving Cause #10: [Visual Flight in Areas of Rising Terrain](#)
- LESSON Plan for Surviving Cause #10: [Low-Altitude Maneuvering in Areas of Obstacles](#)

See:

[www.mastery-flight-training.com/lesson\\_plancategorical.pdf](http://www.mastery-flight-training.com/lesson_plancategorical.pdf)

[www.mastery-flight-training.com/lesson\\_planterrain.pdf](http://www.mastery-flight-training.com/lesson_planterrain.pdf)

[www.mastery-flight-training.com/lesson\\_planlow\\_alt.pdf](http://www.mastery-flight-training.com/lesson_planlow_alt.pdf)

**Note:** The sample lesson plans are just that—suggestions you can use to create your own *FLYING LESSONS* for yourself or fellow pilots. Use what you like, modify as you see fit, and throw away the rest...but vow to consider, live, and when possible, teach the *FLYING LESSONS* of fatal mishap avoidance. Let me know if you'll use a version of these lessons, and what you think, at [mastery.flight.training@cox.net](mailto:mastery.flight.training@cox.net).

Next week, we'll begin looking at the 9<sup>th</sup> most common cause of fatal general aviation accidents: Low-Altitude Maneuvering: Loss of Control.

**Debrief:** Readers write about recent *FLYING LESSONS*:

Transition training instructor and frequent Debriefeer Dave Dewhirst writes about last week's *FLYING LESSONS* on touch-and-go practice:

Great thoughts on the problems with T&Gs. The issues you described are exactly the reasons we teach T&Gs. The pilot needs to be trained well enough to handle the events of doing the maneuver. Even if we make an issue of the problems associated with the maneuver, we know pilots are going to do them anyway,

so we might as well do what we can to keep them as safe as possible. However, the risk of a gear-up is very real. To avoid that, here is what we teach:

1. Your [training program on gear-up landings](#) is very well done and we use its elements [thanks, Dave—tt].
2. Since most gear-up landings are the result of a non-standard procedure or a distraction, we artificially create both [as do I—tt].
3. In all airplanes, even fixed gear, we have the pilot flying (PF) keep his hands on the yoke and throttles during the entire touchdown and takeoff. The pilot not flying (PNF) resets the flaps, props, and trim [a suggestion included in last week's report—tt] The PNF does not need to be an instructor, just qualified to fly the airplane so he will understand the procedures. Solo T&Gs are the result of completion of successful T&G training.

We also discovered that teaching T&Gs in a crosswind is the best way to teach the pilot to keep flying the airplane completely through a crosswind landing and to get him to use the correct procedure for making a crosswind takeoff.

A good viewpoint for safely including T&Gs, for a valid reason, in a structured training environment. Thanks, Dave.

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

Reader John Collins adds:

There is one other aspect to Touch and Goes that often goes unnoticed. That is, the pilot flying tends to concentrate more on the Go portion, than the landing itself. I will often see the pilot rush the landing because of this and will plunk the nose gear down before they would on a full stop landing, thus leading to bounces, directional issues and in some aircraft either a wheelbarrow or loss of directional control. Furthermore, if the pilot flying is still trying to master landings, they don't hear a word of the instructors critique or review on the Go portion. I have not personally found the T&G to be a productive learning exercise and don't use them. A calm, no pressure taxi-back for takeoff gives pilot and instructor time to discuss and absorb the lesson to be learned on the just completed landing.

Thanks, John. That's along the lines of what I teach as well.

## Accepting the visual

The Federal Aviation Administration this week published an Information for Operators (InFO) letter entitled *Pilot's Roles and Responsibilities During Visual Approaches*. Although the InFO directly addresses charted visual approaches, its guidance applies to issuance and acceptance of any visual approach during Instrument Flight Rules (IFR) flight.

According to the AIM [*Aeronautical Information Manual*], it is the controller's responsibility not to clear a pilot for the *Visual Approach* unless the reported weather is at or better than 1000ft/3mi (AIM 5-5-11b). In accepting a visual approach, it is the pilot's responsibility to have either the airport or the preceding aircraft in sight and to remain "clear of clouds" at all times (AIM 5-5-11a). Considering that even a thin "scattered" or "isolated" layer could prevent a pilot from remaining "clear of clouds," it becomes apparent that a pilot may well be given a *Visual Approach*, that he is incapable of accepting or completing. The AIM is clear on this point. The pilot must "advise [Air Traffic Control] (ATC) immediately if the pilot is unable to continue following the preceding aircraft, cannot remain clear of clouds, needs to climb, or loses sight of the airport." (AIM 5-5-11a) In any of these cases, a go-around would be necessary. The requirement to remain "clear of clouds" extends to this go-around, since *Visual Approaches* lack missed approach segments.

For full details read [InFO 11003](#).

See [www.faa.gov/other\\_visit/aviation\\_industry/airline\\_operators/airline\\_safety/info/all\\_infos/media/2011/InFO11003.pdf](http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/info/all_infos/media/2011/InFO11003.pdf)

## In case you missed it...

This month's free Savvy Aviator webinar, "Leaning Basics," was held Feb. 2<sup>nd</sup>. You can listen to a [recording of Mike Busch's hour-long presentation](#) (roughly 30 minutes of talk followed by half an

hour of questions and answers) and *FLYING LESSONS* reader Mike's eight previous webinars on the Savvy Maintenance website.

See [www.savvymx.com/index.php/webinar](http://www.savvymx.com/index.php/webinar)

## AERI Update

The Airman Education Research Initiative (AERI) is working to determine why some pilots are less likely to have accidents, and what all pilots can learn to be more like them. AERI's feasibility phase has been completed and formal, full-scale research design is underway. The research — conducted under a Cooperative Research and Development Agreement with the U.S. Air Force Academy's Department of Philosophy — focuses on ascertaining the roots of pilot error in order to understand the “gap” between pilots disposed to mishaps and those less likely to suffer them. Unlike many approaches, AERI concentrates on understanding the psychological dispositions that help constitute professionalism in aviation. The research design incorporates insights from multiple disciplines, including professional ethics, human factors, moral psychology, and education.

AERI is the brainchild of *FLYING LESSONS* reader Dr. Bill Rhodes, and is sponsored (as is *FLYING LESSONS*) by Avemco Insurance Company. Hopefully this unique approach will help make a real difference in the rate of aviation mishaps, and especially fatal aircraft accidents.

What's your opinion? Tell us at [mastery.flight.training@cox.net](mailto:mastery.flight.training@cox.net).

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

***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



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