



## **FLYING LESSONS** for October 4, 2012

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)

*FLYING LESSONS* is an independent product of MASTERY FLIGHT TRAINING, INC. [www.mastery-flight-training.com](http://www.mastery-flight-training.com)

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

**The FAA preliminary report** gives few details on the crash of a Beech Baron twin:

AIRCRAFT CRASHED INTO THE WATER, COAST GUARD RECOVERED THE 2 PERSONS ON BOARD WITH UNKNOWN INJURIES, WRECKAGE LOCATED 75 MILES FROM GRAND ISLE, LA.

**The true story, however,** is quite astounding. The pilot permits *FLYING LESSONS* to quote his first-person account of his amazing story:

We topped the aircraft off with fuel at Baytown airport (KHPY) on the east side of Houston, Texas. I departed VFR and picked up our IFR clearance from Houston Approach en-route, prior to reaching SBI (Sabine VOR). I was cleared as filed, SBI LLA LEV Q100 SRQ KSRQ [Sarasota, Florida, directly across the Gulf of Mexico].

We leveled off at 11,000 ft. After crossing LEV, we received lost comms procedures from Houston Center, which I am quite familiar with as standard operating procedure on our altitude and routing, having flown this exact flight many times in the past, including in [the accident airplane]. In approximately the vicinity of REDFN intersection, I noticed a small amount of smoke in the cockpit. I quickly alerted ATC that we had a problem before shutting off the master (in hopes that I had an electrical short which would be resolved by doing so). The amount of smoke increased exponentially almost immediately.

Not being able to see very much, I popped the cabin door open and also the pilot storm window. While having the door open sucked out most of the smoke and made it possible to breathe, it was still nearly impossible to see anything. **My passenger then yelled "Flames! Flames!" and just at that time I also noticed flames through the gap between the panel and glare shield.** At that point, I immediately pulled both engines to idle and pushed the nose over into a dive. I activated the aircraft's 406.1mhz beacon in the dive.

By now, it was getting a bit toasty in the cockpit! It was nearly impossible to see out the windshield, so I flew the airplane by looking out the pilot storm window. Thankfully, it seemed that most of the smoke was being sucked out of the cabin door. I leveled the airplane about 100 ft above the water, saw a large yacht which I attempted to get as close as I could to without endangering, then touched down in the water. We skipped off the water, went about 30 ft in the air, and the next time we came down, the water grabbed us pretty hard. We stopped quickly enough that my prescription sunglasses were thrown off my face (they fit very tightly). **I was able to keep the wings level,** and we came to a stop in the same direction we were pointed in, right side up. I popped our seatbelts and we exited the aircraft.

By the time we removed our seatbelts, the water inside the cabin was nearly up to the seats. We stepped out onto the wing and I grabbed our inflatable PFDs [Personal Floatation Devices] and ditch bag. By the time we had them inflated and around our necks, we were up to our necks in water. I estimate the aircraft fully sank within 2 minutes of touchdown. I carry PFDs for every passenger. They were not really suitable for offshore use (I knew this when I purchased them, but went with this style due to size and ease of use. I would have loved to have offshore jackets, but it seems a bit ridiculous to carry them around in your airplane all the time.)

We kept getting swamped with waves over our heads, even though the seas were relatively calm. I activated my SPOT upon entering the water (I have carried one with my since they were first introduced). The yacht never saw us. We waved and waved until the disappeared. We bobbed around in the Gulf for nearly 3 hours. A CBP fixed wing aircraft was doing a search pattern for 30 minutes before the USCG helicopter showed up. They both flew right over the top of us many times and never spotted us. The USCG chopper flew right over us about 6 times before they spotted us. This was where I started to become a bit worried. We could see them,

but they could not see our heads in the water. We watched them fly over and waved at them, while I watched the sun setting. I knew if they didn't find us within 30 minutes, we would be staying the night out there and our odds for survival would drop drastically.

I am not sure how cold the water was, but into the second hour, we were both cold and shivering. Finally they spotted us. The USCG did an excellent job on the pickup. It was the swimmer's first water rescue. They were very professional. Later over a bite to eat, they told me that they had expected to find either nothing, or a couple of bodies. The commander attributed our survival to being "extremely well prepared." (I disagree with this a bit, more on that below.)

When I owned my [Beechcraft] Bonanza, I carried a life raft with me for these crossings. I fly regularly to Florida and Mexico across the Gulf during all times of year. I always carry a PFD for each passenger and a "ditch" bag with water and cliff bars in it. My SPOT is always within reach. When I moved to a twin, after the first few overwater flights, I sold the liferaft on eBay. I looked at it as unnecessarily taking up space. After all, I can lose and engine and still fly to my destination! That was a big mistake. I would have given [anything] to have a liferaft out there. Not only would it have been much more comfortable, but it would have made us much more easy to locate. Two heads bobbing around is tough to see, especially compared to a big colorful raft.

What I learned (or already knew):

1. If you fly over water like I do, bring a raft. If you don't own one, borrow one.
2. Carry a PFD for each passenger.
3. Have a small ditch bag prepared with food and water.
4. Carry a PLB [Personal Locator Beacon] or SPOT on your person.
5. My Baron was equipped with double shoulder harnesses. Without them, we probably would have been knocked out and drowned. At the very least, I would have serious facial lacerations and/or a broken nose. I will not get into an airplane without them. I do not care if it is for a quick ride around the pattern. It is not going to happen.

I consider myself having been (barely) adequately prepared for this. "Well-prepared," as the USCG Commander put it, to me would have meant being in a life raft.

Things in our favor were the relatively warm water temperature, the relatively calm sea state, the pretty good weather in the area, my emergency contacts knowing exactly what to tell the emergency responders [as a result of the SPOT activation]. Also, having lived aboard and cruised my sailboat for 2.5 years and being a USCG licensed captain, I have had extensive water survival training. That definitely helped. Did my seaplane rating help? Probably not (even though my seaplane instructor would like to believe it did!).

I have no idea with certainty what caused the fire. The OAT [Outside Air Temperature at cruise altitude] was in the low 40s [Fahrenheit] and I had turned on the heater approximately 5-10 minutes before the first smoke appeared. Turning it and the master off did not change the situation. It could have been many things, but I can only speculate.

Everyone tells me I am very lucky. I tell them that if I was at all lucky, my airplane wouldn't have caught fire. Something else I have given some thought to: If this would have happened just 4-5 flight hours earlier, I would not be writing this post. A few days before this flight, I spent an entire day bouncing around the southeast almost all IMC and every approach to minimums or near minimums. I am trying to keep a good attitude about the whole thing, but I would be a liar if I didn't admit that I am slightly shaken up over this ordeal.

**In addition to the pilot's self-critique,** what other *FLYING LESSONS* does his experience teach us?

- **Know the airplane's fire procedures.** Electrical and engine fires often extinguish by removing the source of heat (electricity) or fuel.
- **Think *beyond* the checklists.** The Baron's Electrical Fire checklist calls for ventilating the cabin, but it doesn't specifically tell you *how*. The pilot opened the storm window and the forward cabin door, which will evacuate a smoky cabin quite rapidly. Obviously the pilot had thought about how he'd remove smoke from a burning cabin before needing to do so.
- **Know the emergency descent procedure.** Any number of emergencies may require you get down in a big hurry. See the Emergency Procedures section of your Pilot's

- Operating Handbook (POH) or Approved Flight Manual (AFM)—chances are there's a checklist procedure you can practice with an instructor experienced in your airplane type.
- **Consider not only the likelihood of an emergency, but also the consequences.** The pilot felt he was unlikely to have to ditch after moving from a one-engine to a twin. He sold off some of his emergency equipment as a result. The chance of a ditching was remote, but the consequences of a successful ditching are the same regardless of the number of engines. Ironically, in the airplane more capable of carrying the added equipment, it was not available.
  - **A personal locator beacon may be a lifesaver—if** you have time (and remember) to activate it, and *if* someone on the receiving end is briefed on how to immediately notify the proper authorities with the precise location information transmitted by the beacon.
  - **A strobe light**, waterproof flares or other signaling device is at least as important as a transmitter beacon.

**Speculation**, which is all we'll ever have, is that the fire was electrical, the result of a fuel leak in the combustion heater in the nose, or ignition of flammable baggage or other materials by the cabin heater. I know when I was flying Barons I kept a couple of spare quarts of oil and greasy rags used during preflight in the nose baggage compartment. The possibility that this Baron went down because something flammable in the nose baggage compartment, near the combustion heater and hot cabin heat ducts, makes me rethink this practice.

**The pilot's skill** in handling this emergency is matched only by his generosity in letting us learn from his experience. Great job, pilot. And thank you.

Questions? Comments? Let us know, at [mastery.flight.training@cox.net](mailto:mastery.flight.training@cox.net)



Thanks to AVEMCO Insurance for helping bring you *FLYING LESSONS Weekly*.

See [www.avemco.com/default.aspx?partner=WMFT](http://www.avemco.com/default.aspx?partner=WMFT).

Contact [mastery.flight.training@cox.net](mailto:mastery.flight.training@cox.net) for sponsorship information.

Every little bit helps cover the expenses of keeping *FLYING LESSONS* online. **Please support *FLYING LESSONS* with your secure PayPal donation at [www.mastery-flight-training.com](http://www.mastery-flight-training.com).** Thank you, generous supporters!

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

Reader David Heberling comments on last week's *LESSONS* about IFR currency:

A very interesting subject. In my early career, I was blessed with enough IFR flying and approaches to be able to meet the letter of the law to keep current. When I flew with the commuters, none of the airplanes had autopilots and everything was hand flown. I have often said, that when I flew in the commuters, I was at my best flying IFR. We flew straight ILSs, localizer backcourse approaches, NDBs, VOR approaches from a DME arc, and my all time favorite, ILS at night to a circle to land maneuver at an airport on a plateau away from town (KBFD).

Since my commuter days, I have had recurrent training on an annual basis ever since. Captains used to have to do this every six months, but that has changed. In addition, we always back up our visual approaches with some sort of electronic guidance. We also fly our visuals exactly the way we fly the ILS. **What it comes down to is making the procedure second nature so that you are never at a loss to where you are and what you are doing.**

In over 25,000 hours of flying I have never had a partial panel experience. In my own airplane, my vacuum pump failed in VFR conditions. I work extra hard to avoid flying my airplane in low IFR weather. All of my flying in my airplane is leisure flying. As such, my motto is: Do not recreate your day job. This does not mean that a partial panel will never happen to me. It just means that I have been extraordinary lucky.

I think with the advent of lower cost simulators, like the Red Bird, there is no excuse to becoming non-current IFR. Also, it is impossible to legislate currency of any kind. It only becomes apparent after an incident has happened. This is part of the risk assessment all pilots should contemplate. **How will my lack of currency affect me or my family?**

Introspection is natural to an introvert. Extroverts are naturally outward looking. Obviously, this is a generalization and there is true variation in both of these personality types. However, **there is enough evidence that people do not take currency seriously enough, even though their lives depend upon it.** The flying public has no idea what is involved here. All they see is small planes having accidents every week of the year. When they do climb into an airplane, they have absolute trust that the pilot has met every requirement of the law. When that trust is broken, innocent people die. The public just thinks that GA airplanes are dangerous. The truth is **mechanical failures are rare, and pilot error is rampant.**

Thank you, David.

Reader Tom Allen relates a personal experience after a *FLYING LESSON* about engine failures on takeoff:

I had just dropped off my friend at the end of about a 1.5-hour return flight from a pancake breakfast fly-in. The engine was running fine, so [there were] no clues that anything was wrong. I taxied out to the runway and ran the engine up just like always. With checklist complete, I taxied onto the runway for takeoff and started turning in the power. Everything was looking good, sounding good, and I was about to rotate when the sound stopped suddenly, i.e. no sputter, no nothing. It was an extremely surreal feeling. I fortunately had enough wherewithal to release the back pressure and roll to a stop. Five seconds later and this would have been a very different story. Sitting on the runway, I primed and restarted the engine. I started to spin up the power and it stopped again. I started it again and it continued to run, but very rough and not really above about 1500 rpm. So, I taxied back to the hangar, demonstrated this to my friend and called my mechanic.

Interestingly, my mechanic came over a few days later and it ran as smoothly as ever. We could not find anything wrong. We decided to rebuild the fuel pump and flow divider. A few days after that I decided to fly it and the fuel injector on cylinder #6 was plugged and not developing any power [as seen on the engine monitor]. We cleaned #6 and it has run fine ever since. It appears that something got loose in the fuel system.

Now days, I do a fair amount of assessment before takeoff. On shorter strips with fewer choices, I hold the brakes and develop full power before rolling. I keep my figure on the fuel boost pump. I checked and know that the engine will continue running if the pump is on with full throttle. I climb out straight ahead if possible and do not make power changes until over 1,000 feet. I have some idea about where we are going to put down if we have to. I select the takeoff tank before cranking the engine. I select the approach and landing tank at initial descent [and not closer to the ground.]

Thank you for relating your experience and the *LESSONS* you've learned, Tom.

Reader Woodie Diamond adds to the discussion:

Great training routines outlined in [[last] week's *FLYING LESSONS*! For multiengine drivers, I might suggest one more. Like you very wisely pointed out, perform this maneuver at altitude (8000 feet for ME aircraft) and always with a flight instructor that is qualified in the aircraft being flown.

Configure the aircraft for landing, gear down, full flaps, significantly reduced power, over-the-fence speed. Initiate the flare and go-around with one engine. Be ready for a big surprise! When a multiengine aircraft is approaching the runway, configured for landing, the engines are already at or near zero thrust settings. At this point, it is practically impossible to identify a failed engine; rpm will be at or near the same as the operating engine, and the MP will show the pressure of the air at the engine. Only when the throttles are advanced to initiate the go-around, will the pilot know an engine has failed.

During a go-around, I would quickly advance both throttles. My flight instructor hated that and constantly told me that from a low power setting, first gradually advance throttles to a setting where the engines should both be producing power (about 18" in my airplane), then go to full power. Failure to listen to him produced the above drill. I'm sure you can guess the results.

Thanks for your comments, Woodie. You have a wise instructor. More on engine failures on takeoff and in a go-around, from reader Bob Butt:

I have a flight training manual from 1940 extolling the reliability of "Today's Engines." A graphical depiction of [a] dotted line turning back to a skull and crossbone and a dotted line straight ahead to a mug of beer.

Seventy years later nothing has changed. The [*FLYING LESSONS*] comment of landing as slow as possible rings true from experience of others, and recovering of wreckage. Oftentimes even very experienced pilots choose to make questionable departure decisions in an effort to save the aircraft in case of an emergency. It belongs to the insurance company at that point. Emergency parachutes descend at 500 feet per minute, many even faster. The aircraft forward speed makes the difference between survival or not. Oh yea, a shoulder

harness will make a difference also.

Nice imagery. Thanks, Bob. And from reader Scott Jackson:

Good points on practising the "engine failure on departure" drill. During flight tests here in Canada, it is mandatory to verbally review the "Engine failure on the runway" and "Engine failure right after takeoff" handling procedures (called EFOTO and EFATO, respectively) before commencing the takeoff roll.

While not as dire an emergency, the first drill is actually quite important as there is one step in it that is not intuitive: that of pulling the throttle of the dead engine to idle. This eliminates the rare-but not unheard-of problem of the engine suddenly roaring back to full power as the airplane coasts off the runway onto a taxiway. Retracting the flaps to increase the weight on the wheels, thereby permitting heavier braking, is also part of the drill.

For the failure right after takeoff case, I teach the military method summed up by the acronym "SLAM". After the customary, initial moment of shock, anyone, no matter what their stress level, can recall "Straight ahead, Lower the nose, Airspeed(best glide) and Mayday. Just the one word, forget the full, formal transmission.

While this acronym does not include manipulating the engine controls in an attempt to get the windmilling engine to start producing power again, as do some of the other methods, I prefer it as **it concentrates on the primary task of flying the airplane instead of dividing the pilot's attention at a period of low energy coupled with little time and options.**

Were the engine to recover as you adjust the throttle, mixture and carburetor heat, just as the airplane approaches the only decent area to touchdown, then the pilot is faced with an awful decision: whether to continue with the forced landing or climb away. This, too, has happened before and too often resulted in yet-another power loss but this time with no suitable landing area available. Your astute readers will correctly surmise that this occurs with fuel-delivery issues in those airplanes equipped with gravity-fed systems.

It is an interesting exercise, at altitude, to transition from a climb at  $V_y$  to a descent at best glide, while executing a 180-degree turn. Not only is the altitude lost noteworthy, but also the best technique for the course reversal: whether to turn into or away from a crosswind, whether to make it all one turn or turn initially one way and then the other to avoid having a large bank angled attitude near the ground.

Thank you for provoking a helpful exchange on this issue.

Thank you as well, Scott. I like your acronym SLAM. One point: the Airspeed for an engine failure immediately after takeoff would not necessarily be Best Glide. Unless you need to travel some distance to get to a landing area, slow to Landing Without Power speed as discussed in the *FLYING LESSONS* that prompted this discussion. Landing Without Power speed (sometimes called Emergency Power-Off Landing Speed or similar) results in the lowest vertical speed *and* near the lowest safe forward speed on touchdown—both highly desirable conditions for surviving an off-airport landing.

David Heberling is back with an experience to close out this week's Debrief:

I had my own experience with an engine failure on take off. This happened a long time ago when I was instructing two pilot students going for their CFI ride. I was in the left seat with one student in the right seat and the other in the back seat in a Cherokee Arrow. We had come back in from the practice area to do some pattern work. We planned on doing a short field landing, followed by a short field takeoff [on runway 25]. As we lifted away from the runway, we pulled up the gear and reduced the power back to 25 squared [per the POH]. At this time, the engine made some growling, grinding noises.

Now, we were not very high off the ground when this happened. We were just passing the control tower. I had always heard that an engine is most likely to misbehave upon the first power reduction. I made note of that and immediately took control of the airplane. My plan was to jink a little to the right to do a base and final to the remainder of runway 22, which crosses the take off path of traffic off of runway 25. To do so, I had to lower the nose to see my point of intended touchdown. It never worked out that way. As soon as I got pointed at runway 22, we heard a very loud BANG! Then, all of the oil emptied out of the engine onto my windshield. Talk about surprised! I did not know quite what to do. I watched for the ground out of my left side window, lowered the gear, and waited. As the ground neared, the airplane started to yaw to the left, so I applied full right rudder and flared. We touched down in the grass between the parallel taxiway and Runway 22.

Looking back, I realize how lucky we all were that day. My initial reaction to lower the nose to see the

runway ahead of us saved us from a truly gruesome accident. My actual altitude is unknown when the scenario unfolds. I never looked at any of the instruments. I know we had to be less than 200 feet because we did not travel very far before landing again. I did “the big push,” not because I knew that was what I should be doing, but because I wanted to see where I was going. The end result was the same. I know better now.

That was indeed fortuitous, David. Your *LESSON* illustrates something I point out to all my students: a turn back to the airport following an engine failure immediately after takeoff might possibly get you back onto a crossing runway, or a parallel taxiway, or at least the grassy or level area of the airport. In a retractable gear airplane, if the gear's already up you may not have time to put the wheels back down—and trying to will negatively impact your glide performance. So you may land wheels up. But don't expect to turn around and make an otherwise uneventful rolling landing on the reciprocal runway. Touch down Wings level, Under control, at the Slowest Safe speed (a WUSS landing) straight ahead or after a turn and chances are good (if occupants are wearing shoulder harnesses) you and your passengers will walk away.

Comments? Questions? *LESSONS* of your own? Email [mastery.flight.training@cox.net](mailto:mastery.flight.training@cox.net).

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

***Personal Aviation: Freedom. Choices. Responsibility.***

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

---

*FLYING LESSONS* is ©2012 Mastery Flight Training, Inc. Copyright holder provides permission for *FLYING LESSONS* to be posted on FAASafety.gov. For more information see [www.mastery-flight-training.com](http://www.mastery-flight-training.com), or contact [mastery.flight.training@cox.net](mailto:mastery.flight.training@cox.net) or your FAA Team representative.