



# **FLYING LESSONS for December 6, 2018**

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*FLYING LESSONS* uses recent 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 airplane have little direct bearing on the possible causes of aircraft accidents—but knowing how your airplane's systems respond can make the difference as a scenario unfolds. So apply these *FLYING LESSONS* to the specific 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.**

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## ***This week's LESSONS:***

### **All Available Resources**

**My Flight Review client** had been “under the hood” for 40 minutes. I had added an extended amount of simulated instrument practice to his review because he is going to be getting his instrument rating training soon. I wanted him to get a feel not only for flight by reference to instruments—something he hadn't done since earning his Private Pilot certificate two years before—but also for the effects of concentrating on basic attitude instrument flight for a fairly extended period of time. He did a good job on this, logging his first 0.7 hours toward the 40 required to take the checkride.

**As he reached up** to take off his view-limiting Foggles, I pulled the 1961 Cessna 172's carburetor heat knob and then smoothly but rapidly brought the throttle to idle, announcing “**engine failure.**” I'd purposely timed this to occur when he was tired, distracted and disoriented, and not knowing where he was. I'd directly his “hooded” maneuvers so that we were almost directly over a familiar-to-him nontowered airport, but not his home field.

**He quickly** looked around and saw the airport, picking a landing runway (the field has two runways roughly perpendicular to one another, so he had four options) and trimming the airplane for glide. We were about 3000 feet above ground level, which gave him plenty of time to judge his descent. Rolling onto final approach he was still very high. He began a circle to lose some altitude, and when he turned inbound he set up an intercept to a normal, straight-in final approach. I suggested he head straight for the numbers and he made it with a little altitude to spare. All in all he made a good, quick decision, trimmed and maneuvered the airplane nicely to a masterful landing.

**Later** in the postflight debrief I complemented him on his handling of the simulated emergency, then asked: “What did you not do that you should have done?” He reviewed his actions and the successful outcome, but when I asked again he didn't have a response. “Did you attempt to restart the engine?” I asked. No, he was so focused on maintaining glide speed and adjusting his track to make it to the runway that it didn't occur to him to apply carburetor heat (I had already pulled it out for the simulation), confirm the fuel tank selection and quantity (his airplane's Owner's Manual suggests selecting the right fuel tank in an Air Start attempt) and manipulate the mixture control, and confirm the ignition is on.

**He had** plenty of time during the glide, but he did not reference the Engine Failure in Flight checklist. In his defense, in flight instruction we so rarely present an engine anomaly that can be fixed in flight that it simply did not occur to him to try a restart. Frankly although I did stress that during his initial training, it's my fault the *LESSON* didn't stick. Face it, though—he knew we would be tasked to glide to a landing, and I knew I wanted to see him glide to a landing. It's just what we do during Flight Reviews.

**Physicists tell us** the act of measuring affects the measurement. In this case, the expectation of a glide to landing made an attempted restart superfluous. It's an important *LESSON*, however, that the Engine Failure checklist exists for a reason—to be used, *just in case* an engine-out landing can be avoided altogether.

**The *LESSON*** applies to me as an instructor just as it applies to my client and all pilots: when conducting instruction and flight reviews, present enough scenarios where the restart restores at least partial power to imprint the response to use the checklist and make the attempt. Train pilots—and yourself—to respond to emergencies using **all available resources** including memorized emergency response steps (**the bold print**), then when time permits pull out the printed checklist to ensure you have not forgotten something that can have a “measurable” impact on the outcome.

See [http://www.mastery-flight-training.com/presentations\\_and\\_events.html](http://www.mastery-flight-training.com/presentations_and_events.html)

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See <https://www.pilotworkshop.com/botched-go-around?ad=tuner-qoaround-botch>

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

Many of you wrote about last week's *LESSON*, "**Aim for the Blue!**" Richard Depinay comments:

Another excellent article with "aim for the blue"! I am a pilot for a major fractional company, but still enjoy reading your weekly articles tremendously. They serve me as reminders of what I used to teach, what I may have forgotten, what habits I should take as I fly a... you guessed it! A Bonanza on my days off.

You are right that it is very difficult to remain on the ground, when you have a “mission” to accomplish, with our type A personalities. My copilot and I once landed in Boise, where we saw a fellow flying a Piper Warrior pacing back and forth in the lobby. He told us that it had already been three days that he tried to leave the area, but only found low ceilings with ice in the forecast.

Because the sun was showing through the overcast here and there, he asked us what we thought. We confirmed that we did pick up ice on the descent, and that the tops would be too high for a Warrior to break through. A jet flies fast enough that the temperature on the leading edge is as much as 10 degrees higher than the OAT [outside air temperature]. The fact that we did pick up some rime ice would mean that it would be quite serious on a single engine [airplane] with no anti-ice protection. The sun showing would not last. The overcast was going in all direction for hundreds of miles. So he went pacing some more, like you, constantly checking his phone for a new weather update, which never really came.

Another hour later he came back to us and told us that he was planning to remain VMC (marginal from our point of view) and fly to lower terrain for 100 miles or so, and then finally continue on his way at a higher altitude once he had found clear skies. The problem with that plan was flying 500 to 1000 feet AGL,

surrounded by hills and mountains, with many obstacles along the way like trees or high wires, in three miles' visibility. We told him this much, so he went pacing some more.

Another hour passed, and this time we saw him getting ready setting up bags, and telling his wife and daughter to get ready. There was no change at all in the weather, so we were surprised. So I went to talk to him. I told him that there was no doubt that I was going to read about another accident of an idiot flying VFR into IMC weather. But what would be even sadder is that this idiot (I made sure to repeat it that noun to him!) had also killed his wife and daughter, what could be construed as murder.

It is this visualization that made him realize that he was at an impasse. The next thing we saw is the Warrior being put into the hangar, and the pilot and his family going across the FBO to the terminal to catch a Southwest [Airlines] flight. I have no doubt that the logistics to retrieve his airplane again with round trip airfares and hangar fees would be expensive. But an accident with loss of lives, is even a higher cost.

Outstanding intervention, Richard. You saved three lives that day. I did what I did because I could remain 1500 feet or more above flat terrain with virtually unlimited visibility, heading directly toward a nearby airport that was my "out" if the skies did not part as the satellite image portrayed. I fully understand the pressure on that Warrior pilot. You did exactly what needed to be done so this is the only way we'll hear about that pilot's experience that day. Thank you.

Reader William Eilberg adds:

Your article in [last] week's *FLYING LESSONS* was among the best I have ever read.

It struck a strong chord with me. My wife and I have flown our [Beech] Baron around most of the continental U.S., and we have had many experiences where we needed to outsmart the weather while staying safe. There have been times when, while crossing the continent, we chose to stay on the ground for two or even three days.

Like you, when flying a cross-country trip, I almost always file IFR, even when the weather is severe clear. However, there is one advantage of VFR, namely, that one can control one's own route. In fact, a more generalized conclusion from your article could be that *whenever it becomes necessary to control the route for reasons of safety, one should consider VFR.*

As an example, when I am flying into Reno, Nevada from the west, and if the wind at the ridges is blowing briskly as it often does, I prefer to fly VFR (with Flight Following) just so that I can stay away from the more dangerous areas. The TRACON controllers, based in Sacramento, usually lack an intuitive understanding of the effects of wind and high terrain in the Reno area.

Thank you very much, William. As I've written many times, *there is almost never one correct way to fly an airplane.* This goes for VFR vs. IFR as well. As you do, and as I figured out, sometimes it is safer and more effective to fly visually when conditions permit.

Near-legendary flight instructor and my former editor at *Twin and Turbine* and (some time back) *Private Pilot* magazine LeRoy Cook notes:

I've been there many times, as have you, and it always bears repeating. Glad you made it home safe and, most importantly, the airplane survived to fly again. I always chide my students, "I can get more students, but these good airplanes are getting rare!"

Thank you, LeRoy. Good to hear from you.

Another well-known instructor and reader, Dave Dewhirst, adds:

One thing missing from your article was whether or not an Airmet for icing had been issued for your departure area. I'll bet one existed. The FAA now considers *forecast* icing to the same as *known* icing. It is illegal to take an aircraft not certified for flight in icing conditions into *forecast* or *actual* icing conditions. I am aware of two pilot certificate actions in this area where a pilot took an aircraft not certified for flight in icing conditions into an area where an Airmet for icing had been issued. That detail usually solves the problem on making a decision to depart. It may not be legal to even try it. Great article. Keep up the good work.

That's a very interesting point that I should have mentioned last week, Dave. First, for the FAA's most recent guidance on flight in icing conditions, including the legality of doing so, see FAA Advisory Circular [\(AC\) 91-74B](#). I know you know that, Dave, but I pass it along for readers who do

not. It's great information for pilots of airplanes certificated for icing conditions ("known ice") as well as the majority of us who are prohibited from flight in icing by airplane limitations.

Second, to your point: there was no AIRMET for icing ("Airmet Zulu") in the area at the time. Recall that the forecast was for clouds to part before my time of departure. Like TAFs (Terminal Area Forecasts) and Graphical Forecasts (successor to Area Forecasts), an AIRMET is primarily a forecast. It takes input information and then projects it into the future. The experts at the Aviation Weather Center (AWC) in Kansas City can and do manually adjust the warning area of AIRMETs and SIGMETs based on positive or negative Pilot Reports (PIREPs) that are received through official channels—a pilot calling Flight Service directly to file a PIREP, or a controller phoning in a PIREP received by radio to get it into the AWC system. Neither of these happens terribly often, which explains why there are so few PIREPs available most of the time when you're planning a flight.

Since I was between Graphical Forecast issue times and the prognosticators thought the sky would be clear in my area by the time, and no "official" PIREP was in the system at least soon enough to make a difference for me, an earlier AIRMET had been allowed to expire and a new one had not been issued in its place...at least not yet. A new AIRMET *did* pop up on the XM display on my portable GPS after I had scooted out from under the cloud shelf, either because someone's PIREP of icing made it into the system or (more likely, I think) someone at the AWC noticed the forecast clearing had not occurred and previous ice-like conditions still persisted.

You're right, if an AIRMET had existed for my route of flight I could (and would) not have even considered flying in the clouds (in fact I should not have done so even without the AIRMET, and as I wrote last week my internal struggle was largely on this point alone). If visibility was reduced measurably at all, that is, less than the standard 10 miles, or if there was any reported or visible precipitation along my route that could have resulted in airframe ice, I would not have even tried flying visually in the way that indeed worked nicely under the circumstances. Thanks for prompting me to add this point, Dave.

See [https://www.faa.gov/documentLibrary/media/Advisory\\_Circular/AC\\_91-74B.pdf](https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_91-74B.pdf)

Reader Joey Ferreyra writes:

I really connected with this one, Tom. I'm very inexperienced flying in winter weather and struggle with understanding how to determine icing conditions outside of a generic Airmet or the [FAA's Current and Forecast] Icing tool. As I build my RV-10 and begin thinking about all of the fun destinations, especially flying to Denver in the winter time, I don't want to be limited if I can safely get my family home with a smart strategy like yours below. Usage of the satellite imagery as well was helpful for me to better understand that feature. Although I still struggle between the different versions IR [infrared] versus VIS [visual] and how to use each one of those effectively – which one of those were you using in your example [last week]? In any case, if you have any more resources to help me get sharper on safely navigating the trials of flying in the Midwest during Winter, I'd soak it up! Thank you for taking the time to put these together, they're really helpful for someone like me.

The screen capture in last week's report was a visible satellite image. That's what I use virtually all of the time—the darker images are low-level cloud tops, while the brighter white they are in general the higher the tops. The infrared satellite is primarily for use at night when there is not enough light reflecting off cloud tops to show on the satellite's sensors. I've not found it to be terribly effective, however, one reason I'm beginning to shy away from night flying as a personal minimum. From the [National Weather Service website description](#) of IR satellite imagery:

Colder objects are brighter and warmer objects are darker. Lower layers of clouds, generally warmer and lower in altitude, are colored gray. Colder and generally higher clouds tops are highlighted in colors. Infrared imagery is useful for determining cloud features both at day and night.

See <https://www.weather.gov/satellite#ir>

Here are a few other resources for understanding ice, the greatest unknown weather hazard:

- AC 91-74B, cited above: [https://www.faa.gov/documentLibrary/media/Advisory\\_Circular/AC\\_91-74B.pdf](https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_91-74B.pdf)
- Jeppesen's Icing Insights webinar: <https://news.ieppesen.com/aviation-webinars/icing-insights-2/>

- AOPA's "Weatherwise: Precipitation and Icing": <https://www.aopa.org/training-and-safety/online-learning/online-courses/weather-wise-precipitation-and-icing>
- NASA's Airframe Icing Training course: <https://aircrafticing.grc.nasa.gov/index.html>

Thanks, Joey.

Frequent Debriefer Fred Herzner adds:

Loved this week's *FLW*! We all have been there. If your belly has butterflies you know the answer is DO NOT GO. Sometimes it is hard to listen to it.

Indeed it is hard, Fred. As I concluded last week, I'm convinced that **most pilots who are involved in weather-related crashes probably know even before they take off that they shouldn't be flying in those conditions**. That's the voice (and the butterflies) you're talking about, Fred.

Another frequent Debriefer, Mark Marsiglio, was out there also:

I returned to northwest Arkansas on the same Sunday from the pleasant Florida Panhandle, only to discover I should have planned to leave earlier. Between the stiff headwind and the later-than-required departure I was facing a steep temperature gradient lowering the freezing altitude along with the ceiling at my home 'drome. With my family aboard I expected some friction when I began to express doubts about making it home per our IFR flight plan. I was wrong, and apparently trained them well as Passengers *not* in Command.

The Swiss cheese was starting to align with:

- lowering ceilings
- light rain/contaminated runway
- very strong crosswinds (gusting to over 40kts across all local runways)
- a PIREP of icing on the local approach frequency I was monitoring

The last one was the kicker - with a 1200 [foot] overcast I would expect to be in the clouds for vectoring. With no ice protection the choice was obvious (despite a lack of PIREPs on XM weather): **divert**. No questions at all from the family, except my daughter doubted I could land in a gusty 40kt headwind.

I opted for KFSM [Fort Smith, Arkansas], which had the closest runway aligned with the winds, plentiful rental cars, a nice selection of lunch stops, a 4100 foot ceiling, a control tower, and [an] interstate [highway] the whole way home (a 1 hour drive). [It was an] easy VFR flight home the next day and all is well.

Thanks for making the right choice, Mark. Like me, you found (as I wrote last week) **often pilots feel more pressure to meet a passenger or family member's schedule than even that person exerts on us him/herself**. Frequently we perceive pressure that is not there.

See [https://en.wikipedia.org/wiki/Swiss\\_cheese\\_model](https://en.wikipedia.org/wiki/Swiss_cheese_model)

Reader Guy Mangiamele helps me wrap it up for this week:

A great piece of writing and advice, Tom! After so many years of following you, I (and am sure others) find it inspirational to watch you too wrestle with all the same issues toward a safe outcome. I also think *the expense of delay*—as you rightly pointed out—is drastically underestimated in many pilots' plans to try something they may not otherwise attempt.

My personal struggle was the reason I wrote last week's *LESSONS*. It was a reminder to me that we don't **have** good judgment...an adjective that describes what we are. We have to continually **exercise** good judgment—a verb that describes what we do (or do not do), an action we have to consciously take every minute from flight planning through engine shutdown. Thanks, Guy.

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

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## Premeditated Stupid

*Aviation Week's* James Albright combines his own experience as an Air Force pilot and a litany of other mishaps primarily involving professionally-flown jet airplanes, with real lessons for us all not only about the questionable decisions we sometimes make when in command of an aircraft, but also *why* we make them. “**You don’t know everything you need to know when operating outside of ‘normal’ conditions,**” is one of Albright’s many astute observations.

Read “[Premeditated Stupid: A Planned Mistake is Something Worse](#),” posted today by *Aviation Week*. You must register to read the article, but registration is free.

See [http://aviationweek.com/business-aviation/premeditated-stupidity-planned-mistake-something-worse?NL=AW-05&Issue=AW-05\\_20181206\\_AW-05\\_295&sfvc4enews=42&cl=article\\_4&utm\\_rid=CPEN1000003298670&utm\\_campaign=17579&utm\\_medium=email&elq2=b740e4e5ec534e33b9f30d35c1dd080f](http://aviationweek.com/business-aviation/premeditated-stupidity-planned-mistake-something-worse?NL=AW-05&Issue=AW-05_20181206_AW-05_295&sfvc4enews=42&cl=article_4&utm_rid=CPEN1000003298670&utm_campaign=17579&utm_medium=email&elq2=b740e4e5ec534e33b9f30d35c1dd080f)

## Webinars

Last night I delivered a webinar for American Bonanza Society (my real job, and a great one!), titled “Cold Weather Operations in Beech Airplanes.” Although there is a Beechcraft slant to some of the presentation, the information applies to all airplanes. [Take a look on the ABSWeb webinar page](#).

Next Wednesday, December 12<sup>th</sup>, I’m presenting an EAA webinar: “[Master the Transition: Earning Your Complex and High-Performance Endorsements](#).” There’s a lot more to earning your high-performance and/or complex endorsements than just more power and moving the gear switch up and down. I’ll discuss what you really need to know to master high-performance and complex airplanes so you’ll fly safely and with confidence by fully understanding normal, abnormal, and emergency operations. [Register now](#) and log in for the webinar next **Wednesday at 1900 U.S. Central Time (0100Z 13 December)**.

Both webinars qualify for [FAA WINGS credit](#).

See:

<https://www.bonanza.org/globalassets/asf/absweb-landing-page.pdf>

[http://pages.eaa.org/WBN2018-12-12MastertheTransitionEarningYourComplexandHigh-PerformanceEndorsements\\_LP-Registration.html](http://pages.eaa.org/WBN2018-12-12MastertheTransitionEarningYourComplexandHigh-PerformanceEndorsements_LP-Registration.html)

[https://www.faasafety.gov/WINGS/pub/learn\\_more.aspx](https://www.faasafety.gov/WINGS/pub/learn_more.aspx)

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