

CHECKPOINTS



Lowering the risk.

Like most pilots who are enthralled with flying, I admit I've gone through life trying to convince non-pilots that flying isn't dangerous whenever the topic presented itself. Mostly that was when someone discovered I was a pilot and, heaven forbid, even built and flew my own airplanes. I was sometimes even asked if I had a death wish, since I also ride motorcycles. I really never understood the viewpoint they held, as I do neither activity for an adrenaline rush, although I will admit that both flying and motorcycle riding can be addictive. As I get older, there is now one other thing that I am ready to admit—they were right!

Yes, you read it correctly. I agree that flying airplanes and riding motorcycles can be dangerous, not unlike any other activity. It seems heretical for me to actually admit that, but I've finally come to the conclusion that the reason I haven't understood the opposing viewpoint is that I didn't believe the activities to be dangerous. Each of them has some risk, but so does getting out of the bed every day. I think it is my own approach of reducing the risk while working to minimize it that got me caught up in arguing whether it was dangerous or not.

So there's the key, and what I intend to expand upon—it's all about mitigating the risk, not discussing whether it is dangerous.

When I was stationed at Davis-Monthan Air Force Base in the '70s, there was a sign out in front of one of the buildings

that has always stuck with me. It stated "Proper Preparation Prevents Poor Performance," and we were taught to remember the five P's. I think practicing that philosophy has served me well with regards to flying, and in the case of the Prescott Pusher, it even saved my life.

Right now the FAA, in conjunction with a number of other organizations, has a real focus on reducing the number of Loss of Control (LOC) accidents, with some nice monetary prizes being offered for the invention of the best product to have a positive impact.

Personally, I think the cart is before the horse. We seem to be living in an age where we are expecting someone or something to do our thinking for us, and when necessary even save us from ourselves. What if we practiced preparation? Some call it scenario planning, and it is used in all walks of life, including the military and business.

So, to go further, let's discuss some of the more dangerous facets of flying as related to the particular area of aviation that we are focused on in KITPLANES®: building and flying our own airplanes.



Before your first flight, have someone in the cockpit make loud noises unexpectedly. Practice until you are not distracted and do not react to the noise. When the unexpected noise occurs, you should be yelling, "This is my airplane and I am going to fly it."

Vic Syracuse

Vic is a Commercial Pilot and CFII with ASME/ASES ratings, an A&P, DAR, and EAA Technical Advisor and Flight Counselor. Passionately involved in aviation for over 39 years, he has built 10 award-winning aircraft and has logged over 8000 hours in 70 different kinds of aircraft. Vic had a career in technology as a senior-level executive and volunteers as a Young Eagle pilot and Angel Flight pilot. He also has his own sport aviation business called Base Leg Aviation.



Use a loud shop compressor to simulate an engine failure when it stops running. Adjust the hose for a small leak so the compressor cycles on and off, allowing you to practice engine failures *and* go-arounds. When you have the procedures memorized, you are ready to go fly.

Preparing for First Flights

I think we can all agree that probably the most risky part of the venture is the first flight. After all, we are trying to take a bunch of parts assembled by an amateur into the sky, asking some of them to perform at their maximum output during the most dangerous phase (takeoff and climb), and get us safely back on the ground. A good portion of these first flights even have less-than-proficient pilots performing them, yet somehow the majority of them work out OK. But every once in a while, something goes terribly wrong and results in loss of property, the airplane, and sometimes even death.

I admit that it's hard to not get excited after completing your project and receiving the airworthiness certificate. I've been around those who can't go fast enough putting the aircraft back together after the inspector leaves. In some minds it is still a project until it flies. As a DAR, I do gently remind every builder that it is no longer a project. It is now an airplane and needs to be treated differently—like a loaded gun, in fact. If you don't treat it accordingly, it will bite you, and the first 10 hours are the most crucial.

I am happy to say that in the last couple of years, I have noticed a much better approach being taken to first flights. I am seeing more people acquire transition training in lieu of rushing to fly the newly completed aircraft. The Additional Pilot Program has been a plus, and I have helped a number of builder/pilots on their first flight take advantage of it in the role of safety pilot.

However, the risk is still there, and this is where I think preparation and scenario planning can really play an important part in reducing the risk.

First, accept the fact that unless you are some highly-trained steely-eyed

test pilot, you could be in sensory overload during the initial and critical phases of the first flight. Having made almost two dozen first flights in a number of Amateur-Built aircraft, I think I have earned the right to offer that opinion. Things are going to happen fast, even when they are working well. When they aren't working well, things will pile up 10 times faster, unless you are prepared and practiced. You should recite this mantra out loud until you are saying it in your sleep: This is my airplane and I am going to fly it.

This is where scenario planning prior to first flights can really be useful. You really need to sit in the cockpit and run through all kinds of potential scenarios, along with the proper action, and perform them repeatedly until it comes along naturally and without taking thinking. As an example, practice immediately pushing the controls forward when the engine quits without delay. How does one practice this safely you ask? Try this: Most hangars/shops have an air compressor. Turn it on while you sit in the cockpit (or chair at home), and when it quits running use it as a simulated engine failure. Leave a valve open so it runs down and starts over again. While it's running, do something else like entering a flight plan or tuning a radio, just enough to have a distraction. When the compressor quits, react to it as an engine failure. Add more distractions by having someone sit next to you and make loud noises when you least expect it. Simulate engine alarms by having your cell phone randomly chime. Practice until you are not



Most EFISes today allow for custom emergency checklists and will even pop up with the correct page depending upon the phase of flight. However, you should only use them if speed and altitude permit. Always fly the airplane first. Important action items, like fuel, air, and spark should be committed to memory and practiced.

distracted and do not react to the loud noises. Every time the compressor quits or a loud, unexpected noise occurs, you should be yelling out loud, "This is my airplane and I am going to fly it."

Far too many LOC accidents recently are the result of distractions at the most inopportune time such as doors and canopies coming open during the initial takeoff and climb phase. By themselves they should not have been a problem. All that was needed was to fly the airplane, land, and address the problem on the ground. But unless you practice and are disciplined, it is human to react to very loud distractions. It is normal to want to solve the problem. After all, as a builder you've probably been solving lots of problems during the course of the project. The door coming open is just another problem, right? Wrong! The only problem to be solved is to get the aircraft back on the ground safely. The only problem that should ever require immediate attention on a first flight is fire in the cockpit. However, knowing you have practiced and planned for it, it should be a matter of turning off the electrical power and fuel if necessary, blindly grabbing the fire extinguisher and discharging it if needed, opening cockpit vents, all the

while flying the airplane. Hopefully, you practiced this scenario with blinders on, because the smoke will usually be burning your eyes!

To this day I know that being prepared saved my life on the first flight of the Prescott Pusher. I did take the time to sit and practice scenarios. I also asked myself what was different between my airplane and the factory demonstrator, since I was the first customer-built airplane to fly. I came to the conclusion that I was about 25–30 pounds lighter than the factory pilot, so I grabbed a 25-pound bag of lead shot and sat it on the seat next to me. When the aircraft unexpectedly jumped off the ground early and pitched up dramatically due to an aft CG, I immediately pushed forward on the yoke and grabbed the bag of lead shot, throwing it underneath the pedals on the right side. It made all of the difference in the world, and I thanked my lucky stars for having practiced.

Memorizing Emergency Checklists

In the airlines and the military, there is a requirement to memorize certain emergency checklist items that require immediate action without reference to a checklist. You have to demonstrate that

you know them verbatim or you don't pass go. Unfortunately, some of those checklist items are there as a result of previous accidents, and it's easy to recognize some of the more infamous ones. Nonetheless, I think everyone should develop the same procedures and requirements for their particular aircraft. I do believe in written checklists, and with today's glass cockpits it is very easy to create a checklist and use it in real time for each phase of flight. However, once the throttle is pushed forward for that first flight, there should be no reliance on checklists for critical events. The steps and appropriate actions must be memorized and practiced until they can be executed without failure. I believe an approach such as this will go a long ways toward reducing the LOC accidents on first flights, and even subsequent flights. After all, who says the door will only come open on first flights? Experience has taught me that the first 10 flights or 10 hours of a new aircraft continue to be risky. This is the time period where contaminants from fuel systems will show up, loose connections tend to fail, and adjustments are usually being made to control systems to correct a heavy wing or yaw tendency. Pay attention, and don't trust the airplane.

Once Phase I is completed, you actually enter another phase of high risk. Everyone's been waiting to get their ride, and guess what? Here come some more distractions, potentially when you least expect them. Again, it doesn't hurt to do some more scenario planning ahead of time and even include those first passengers. Tell them ahead of time what they might expect, such as a loud noise or bump underneath the seat when the gear is retracted. Sure you flew the airplane with weights to simulate passengers and baggage during the test period, but those simulated passengers didn't have the cabin vent blowing on their microphone, which is now making a very loud noise as you rotate and could be confused for an open door. Get the idea?

Proper preparation and practice will keep the fun factor alive, and that's why we fly airplanes, as dangerous as they are. ✈