



J. MAC MCCLELLAN
BETTER PILOT / LEFT SEAT

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Simulator Training Makes Better Pilots

SimCom brings the best of structured training to personal flying

THE SAFETY RECORD OF the major airlines in the United States is simply astonishing. It has been more than nine years since a passenger on a major airline in the United States was killed in an accident. And the business jet safety record, while not quite as good, comes very close to that of the majors.

Many factors contribute to the outstanding safety record of these two groups, but I think one of the most important is regular standardized training in simulators. A simulator concentrates and focuses the training time in ways that are not possible in actual airplanes. And because a sim can't hurt you, it allows instructors to teach, and pilots to practice, the kinds of in-flight emergencies that would be insane to attempt in a real airplane.

For many reasons, the biggest being cost, simulator training was not available to pilots of propeller airplanes until years after sims had become fundamental to pilot training in jets. But SimCom Training Centers has done more to change that than any other company by building simulators for a range of propeller singles and twins. SimCom didn't simply adopt the jet-training concept wholesale, but took the best of sim training and customized it to best suit the way an owner-pilot operates.

I have been to SimCom several times over the years for recurrent training in my Baron 58 and have always been impressed by the level of personalization designed into the system. SimCom was created from scratch to serve the owner-pilot and the smaller flight departments. Maximum class size is two pilots with a dedicated instructor, meaning everyone must participate at a high level, and the instructor can be certain that each pilot understands the material. When I was there for training last December I was the only one signed up for the Baron for those days so the instruction was one-on-one.

A typical recurrent training session extends over three days with 12 hours spent in the simulator: six in the left seat, and six more observing from the right. If there is only one pilot in the class, the training can be completed in two days.



Initial training courses for pilots new to the airplane may take more time, depending on the complexity of the airplane. SimCom also offers what it calls an “advanced refresher” course that is aimed at pilots who have been through several recurrent courses, and it can be customized to the desires of the pilot.

Ground school is never going to be a spellbinding experience, but SimCom does a good job of delivering the information about your airplane in an effective way. The printed materials are succinct and contain the information that you need to know to operate your airplane and its systems, and to help in troubleshooting failures, without wandering off into information you can’t really use, such as the timing angle on the magnetos.

Each SimCom classroom has a computer and projector that can display course materials, but it’s also connected to the Internet to show any available online information.

MAKING PEACE WITH THE SIM

Simulators don’t fly exactly like the airplane they replicate. This fact drives most pilots new to sim training crazy. We know we can do okay in the real airplane, but the first few times in the sim we really hack it up. Just holding heading and altitude and staying on the target airspeed will be a challenge.

The issue is that the sim can’t deliver every subtle cue that the real airplane does. We don’t think of it when we’re flying, but there is a continuous sensory input of sounds, slight G-loading changes, and tiny feedback from the controls that is missing in the simulator. Those cues help us know the airplane attitude or airspeed is changing even when flying in the clouds, but many of those tiny sensations are missing in the sim.

The result is that you must have an excellent instrument scan to fly a simulator with precision. Of course, we can’t fly any airplane, real or simulated, with our eyes closed, but in the sim the scan is paramount. The sim has an excellent visual display, and that helps when flying in simulated VFR, but to maintain a precise flight path, only the instruments in the

simulator can show the way.

Many pilots become frustrated in their early attempts at simulator flying because it is a challenge. If there is any weakness in your instrument scan, the sim will quickly uncover it. Believe me, I have endured these frustrations over the years in various simulators, but like most pilots, I have a competitive streak. This sim is not going to beat me. Other pilots can fly it well, and I’m going to be one of those.

Over the years I have noticed that there are some good IFR pilots who do not fly well in the sim, at least not until logging considerable time. But on the flip side I have never seen a pilot who masters the sim who isn’t also an IFR pilot who flies the real airplane with great precision. The major airline and business jet record is irrefutable—pilots who learn to manage the sim are also on top of their game in the airplane.

The simulator also allows you to practice IFR procedures in weather conditions that are rarely available for training flights in the real world. SimCom has brand new visual display graphics that deliver a realistic presentation of what actual low-visibility conditions on approach look like.

We pilots often talk about “breaking out” on the approach, but in the real world of visibility less than a mile, you really never do break out. What you see in actual low visibility is a dim view of the approach lights, and then some threshold lights, and eventually runway edge lights. That’s what the sim visuals show. In the actual airplane you can’t find real low visibility when you want it, and if you could, training flights on those days are usually restricted by other traffic in the system.

When you compare the agility of the SimCom visuals in re-creating the IFR conditions to the unrealistic view provided flying under the hood, the sim training is worth every penny. When you lift the hood at the end of an approach it’s a nice VFR day. When you keep the needles centered in the sim you still have lots of work to do from the decision point on to the runway as you descend through realistic murk.

LEARNING YOUR AIRPLANE

One sim session can teach you more about your airplane than hundreds of hours of flying in the real thing because all sorts of failures and anomalies can be explored in the sim. For example, if one of the flex drive cables that extend the flaps in a Baron fails, the flap on the other wing will extend, generating a powerful rolling moment. The first time this happens to most pilots we are certain an engine failed because the roll rate is so powerful. You can’t fail the flap drive in the real airplane, but it could fail unexpectedly someday.

Like other major simulator training centers, SimCom instructors do not ladle on multiple unrelated failures. But, one failure can cause a cascade of events that, if not handled properly, can leave you in a world of hurt. My favorite is a generator or alternator that quits on one engine, and then the other engine fails entirely, leaving you with half the thrust and none of the generating output. It could happen in real life, and does happen in simulators.



The King Air 350 simulator is equipped with a Collins ProLine 21 avionics panel.



The PC-12 NG is a good example of SimCom's modern panels and enhanced visuals.

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Hawker Beech 400XP
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Lear 35/36 • Lear 55
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Piper Malibu/Mirage
Piper Matrix • Piper Navajo/Mojave
Piper Seneca • Piper Saratoga
Aerostar



SIMCOM
TRAINING CENTERS

Orlando

Scottsdale

Dallas



Engine failures are a big part of sim training—on takeoff roll, shortly after liftoff, in cruise, and on final approach. You can count on having to attempt an engine-out go-around at least once during the course in a twin.

Any pilot, even those who don't fly twins, could tell you how to handle an engine failure. Step on the rudder hard to stop the yaw toward the dead engine, roll in as much aileron as needed to keep the wings close to level, and then feather the propeller on the failed engine to get rid of the drag. What the sim does is take this intellectual knowledge of how to deal with the emergency and transform it into actions. No matter how well you know the procedure in your head, getting your hands and feet to do the right thing at the right time takes practice that can only be done at low altitudes and in critical situations safely in a sim.

Even in the singles such as the TBM and Pilatus turboprops at SimCom, engine failure is an important part of the training. Restarts must be considered and the glide must be managed to optimize your chances in the forced landing.

I even had both engines fail in the Baron, which is part of the training syllabus. The drill is, of course, to feather both props immediately to optimize the glide, but after that it's the usual forced landing drill. I couldn't make it back to one of Orlando's runways so I opted for a lake and took my chances Sully style. It was a crash, but I think I would have survived; at least I had better chances

than hitting the crowded residential streets and homes around the lake.

VISION EQUALS MOTION

SimCom uses both full-motion Level C simulators and fixed sims that are technically called flight-training devices. Most of the propeller airplanes are the fixed type, but they are different than most because of huge visuals displayed on 8-foot-high screens ahead of the actual airplane cockpit. The screens wrap around the full 90 degrees to the left, and about 60 degrees to the right.

The size of the visual displays, and their distance ahead of the windshield, produce an overpowering sensation of motion. The resolution and detail have been recently upgraded, so you can fly daylight, dusk, or night. The quality of the display is so good it's easy to fly the sim visually, which is not true of units that have small visual displays.

The qualities of the simulator are important in any sim training, but that is not the most crucial issue. What really counts is the structure of the training that SimCom and other simulator-based training schools offer. Flying IFR is all about discipline, and that is learned best in a structured environment. If you don't believe me, look at the safety record of the jet pilots who routinely train in sims. **EAA**



J. Mac McClellan, EAA 747337, has been a pilot for more than 40 years, holds an airline transport pilot certificate, and owns a Beechcraft Baron. Mac is also writing an online blog at <http://MacBlog.com>

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TURBOPROP & PISTON: PC-12 • TBM 700/850 • Meridian • JetPROP DLX
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