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Special Report on SIMCOM Training Centers

Sim Training:
A Pilot Report

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Sim Training: A Pilot Report

by Doug Rozendaal

Imagine Johnny Carson at his desk in his robe and turban with an envelope held to his head saying, "Medical exams, freezing rain, and simulator school." He opens the envelope and reads, "Name three things pilots like less than a root canal." Learning can be fun, but in a business where mistakes can mean the difference between life and death, or when turning the ignition on after the fuel cock is open during an air-start means melting a $250,000 Pratt & Whitney, it is hard to relax and enjoy the ride. Creating an environment where a pilot is pushed hard enough to make mistakes and learn new habit patterns that reduce those errors, without breaking the fragile shell of a pilot's ego is a delicate dance.

The ability to do that is not a function of how big or pretty the building is, how well the simulator flies, or if it has a fancy glass panel. It is about the ability of an instructor to screw off the top of a pilot's head, look inside, and see how it works; then lead the pilot to a place where he or she can see a better way. All that while making them think it was their own idea. It doesn't have much to do with flying, but when done correctly, it's magic; and when it's not … it's like, well, a root canal.

In a business park, just north of the Orlando International Airport, stands a nice building with a sign out front that says SimCom. It could be anything, a high-tech company distributing data bits, or a medical office dispensing doctors' orders and drugs. But the only doctors in the building are there to brush up on their flying skills. This building is home to a company that, nearly 20 years ago, took a new approach to flight training and simulators. Before SimCom there were two kinds of simulator training – a multi-million dollar, full-motion simulator or a floor-mounted generic flight training device with no, or very limited, visuals. SimCom changed all that.

Wally David, an entrepreneur, teamed up with investor Jim Gibson to set out on a different route. Starting with an actual Cessna 421 cockpit set in front of three large projection video screens, the flight controls, instruments, switches, lights and circuit breakers were attached to computers that sense input, control output and provide control pressure feedback.

This brought a new level of immersion to fixed based simulation that was much more cost effective than the expensive and high maintenance, full-motion simulators. The FAA idiom for these machines is Flight Training Device (FTD). The second FTD SimCom built was a Piper Navajo, followed by a King Air 90.

The company grew steadily and after investment firm J.W. Childs purchased Pan Am Flight International Flight Academy in 1998, they acquired SimCom in 1999. Although they continued to grow, the airline training culture and the owner flown/business aviation culture did not mix well. SimCom and Pan Am split up in 2006 and Pan Am was sold. J.W. Childs retained SimCom and founder Wally David remains as Chairman and CEO today.

The inside of the FTD is typical of what you'd expect anywhere - the instructor sits behind the cockpit and puts the pilot(s) through their "flight".

The Company

SimCom has four facilities – two in Orlando, one in Scottsdale, Ariz., and one at the Piper facility in Vero Beach, Fla. King Air training is done at the Orlando Lee Vista home office and the Scottsdale location. The home office has a King Air 90, 200, and 350 FTD, and the Scottsdale facility has a full-motion level C King Air 90 simulator. SimCom produces most of their own simulators and FTDs at the Orlando Park South location.

The FAA classifies FTDs and simulators based on their capabilities. Except for the level C King Air 90 simulator, all the SimCom King Air units are FTDs. A level C or D simulator allows all types of flight training, up to and including an FAA type-rating check ride; Flight Training Devices can be used for instrument currency. While the FAA differentiates between simulators and FTDs, unless it has something to do with FAA certification, pilots generically Robert Brooks, King Air program coordinator, says the King Air business is steady.

Initial courses are five days and recurrent programs last three days. Each day is a blend of classroom and flying. The training materials are thorough and useful, with more detailed information than the POH. There is a quiz at the end of each chapter and working through the chapter will get you through the quiz.

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The classroom course is pointed entirely at the airplane and its systems. This is not classroom instrument, weather, or avionics training … more about that later.

Full disclosure compels me to confess that my recent trip to Orlando was to complete recurrent training in the Cheyenne IIXL. The process is the same, and during my visit I toured all the King Air devices and was able to fly the model 350 box and get a feel for it.

Flying the Box

Video game programmers, movie producers, and simulator engineers set out to immerse the participant in an experience where it all seems to become real. Sights, sounds, movement, and even smells, contribute to the reality. The thinking is, the closer the experience is to reality, the greater the likelihood of achieving immersion.

Pilots who regularly attend a simulator school almost universally complain that the box doesn't fly like the airplane. That's probably a fair indictment, and while the engineers go to great effort to make them fly like the bird they represent, it is just not possible to encompass all the variables of aviation in a computer simulation.

The simulator experience hones a pilot's ability to adapt to an unfamiliar aircraft. Flying when everything is perfect should be a given. Let a goose remove half the horizontal stabilizer, or a malfunctioning deice boot fail to clear one wing, and our well-mannered King Air can make a slightly pitch-sensitive simulator seem like a Piper Cub. Adapting quickly to the peculiarities of the simulator, or a broken airplane, might be just the skill it takes to extract a successful outcome from an emergency.

The King Air 350 FTD flies very much like the airplane. The control pressures are realistic and the responses intuitive. The correlation between the flight instruments and the outside visuals is excellent. Unlike most low-end simulators and training devices, the SimCom FTD graphics work well in the daylight mode. After a little time in the FTD, the small quirks of the device are second nature and the focus changes from how to fly the box, to how to execute the particular emergency procedure.

The exception to that is the takeoff roll. All the sims I have flown at SimCom (and other training facilities) are much more sensitive to rudder inputs on the runway than the respective airplane, and that includes the King Air 350 box.

Once off the ground and in the clouds, it is easy to become immersed in the experience and everything including the sweat and cursing becomes very real. A two-hour session of multiple emergencies is exhausting. A steep learning curve is the reward when tasks are quickly performed, critiqued, corrected, repeated, and reinforced.

The instructor has a list of tasks that must be accomplished by the client to complete the flight training. Most of them are centered on system failures and other in-flight emergencies. The instructors take a real-world

approach to the scenarios because most of them have many years of real-world experience in the airplanes they are teaching.

Once the task list is successfully completed, the remaining time can be used to brush up on whatever the client would like. I spent some time working on engine failures at, and immediately after, rotation. We dialed the weather down to a 200-foot RVR and started simulating V1 cuts until I was satisfied with my performance. This task is beyond the completion requirements of the course, but it is a great test of vigilance, reaction, and instrument scan.

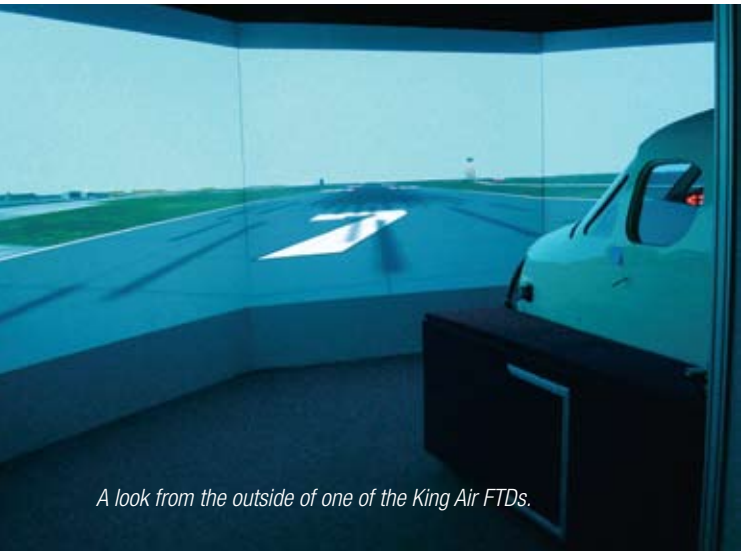
To Move or Not to Move?

The importance of motion in simulation is an unending discussion. The lack of motion cues requires extra diligence in scan to keep the airplane moving in a straight line away from the ground. Learning to rely on what you see on the panel instead of what you feel in your backside might be a benefit. Most new helicopter training devices and the latest U.S. Navy F-18 simulators are bolted firmly to the floor.

Motion exponentially adds to the cost. For aircraft training requiring type ratings or FAR 61.58 proficiency checks, full-motion brings the economy and safety of completing them in a Level C or D simulator. With the exception of the 350, King Air training is to satisfy the customer or the insurance company. With no FAA requirement for full-motion, the SimCom story is the economy of the fixed based FTD and outweighs the luxury of the motion simulator.

The Instructors

The same instructor does both flight and classroom training. This allows the instructor to tailor the training to the customer's particular needs and carry discussions about a system's operation from the classroom to the sim.



A look from the outside of one of the King Air FTDs.

There are about 50 instructors in the Orlando facility split evenly between full- and part-timers. SimCom is rightfully proud of the experience and longevity of their instructors. My Cessna 421 instructor from 2001 was still walking the halls on this visit. They encourage both customers and instructors to do in-aircraft training whenever possible. This helps the instructors with real world, in the airplane, operational experience.

The ability to tailor training to the customer makes SimCom a favorite of the owner-flown crowd. Director of Piston and Turboprop Training, Howard Cox, estimates that 40% of the King Air customers are owners. Cox says, "The mindset of owners is different; some believe money equates to ability. There's a difference between owner operators who grew up with airplanes. The King Air group is more stable and mature than some of the turbine single owners."

The Future

The ab-initio Cirrus and Columbia owners will be upgrading to bigger airplanes and a part of that group will want load hauling capability and multi-engine security of the Beechcraft twin turboprops. SimCom sees a bright future in that market and has plans to upgrade and improve the King Air sims. SimCom is working to upgrade the visuals on all their FTDs. That will improve resolution, allow operations at any airport in the U.S. database and have surface and in-flight traffic options. In addition, Garmin 430s or 530s will be available in all the FTDs by the end of the year.

SimCom recognizes the need to have a Collins Pro Line 21-equipped device and is currently building it. Brooks said, "I don't think we need to have Pro Line 21 in each variation. It is about teaching procedures and the procedures are the same. We will use other (model) sims to focus on specific avionics packages."

A Garmin G1000 system was being completed and G1000 training will be available in an avionics lab setting soon. SimCom uses interactive classroom training equipment in their jet programs and plans to expand that capability into the King Air program.

The company goes to great lengths to make the training experience friendly and pleasant. The training is done during hours where normal people are operating without disrupting their circadian rhythms. The objective of the classroom and sim training is to teach the operator how to operate the airplane safely, without demoralizing them.

Most of us go to sim school because we have to. However, if we're honest with ourselves, we know we need to. The drills we do in the sim are things

After a little time in the FTD, the small quirks become second nature and the focus changes to how to execute a particular emergency procedure.

we don't, and shouldn't, do on our daily flights. Our passengers wouldn't appreciate it if we practiced IMC engine failures at rotation on our regular trips. However, our chances of surviving an incident like that are inversely proportional to the time since we last practiced. Maybe it is a medical office after all – we go there to take the medicine. SimCom's objective is to make it as pleasant and useful as possible.

About the Author: Doug Rozendaal started his aviation career hauling boxes in the right seat of a DC-3. He holds an ATP, CFII, MEI, SES, with type ratings in the B25, DC-3, and PBY. He is also authorized in the P-51, F4-U, F6-F and T-28 with an all makes and models, single and multi-engine piston powered endorsement. He spends weekends flying various warbirds for the Commemorative Air Force, and various museums and private collectors.