

Just like being there

An above-the-cockpit view of Simcom's Daher TBM 930 simulator as it makes its way over a vast Arctic landscape in Quebec. Where: Orlando, Florida—but also about 15 nm south of the Kuujjuaq, Quebec, airport

Photographer: Mike Fizer

Motion—real and virtual

The eyes have it

BY THOMAS A. HORNE *Turbine Pilot* Editor

PILOTS ARE AN OPINIONATED bunch, so debates about training methods often crop up. Some favor one-on-one training in the actual airplane. For other pilots, simulator-based training has become the norm. Lost your hydraulic system? You can see what manual, no-anti-skid braking is like—blowing the simulator's tires instead of your own.

Different simulator training companies offer different capabilities. The biggest is FlightSafety International, which has been around since the 1950s. It has 300 full-motion simulators and has trained thousands of pilots at its learning centers around the world. CAE SimuFlite is another high-profile global training organization with a large client base. TRU Simulation and Training, which is owned by Textron—the parent company of Cessna and Beechcraft—is another prospering company that offers simulation-based training to business jet pilots. All these companies use a range of full-motion simulators equipped with

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> sophisticated visual systems. Then there's Simcom Training Centers, another major player with thousands of customers, which uses both full-motion and stationary simulator cabs.

> There's a hierarchy among full-motion simulators. It runs from advanced aviation training devices (AATDs), such as Redbird Flight Simulation's FMX, up through increasingly sophisticated simulators from Levels A through D. Each level allows greater credit toward more maneuvers, and requires more quality tests for certification. Level A lets you log instrument approaches and other maneuvers (such as intercepts and holds), but visual displays may be limited to either day or night conditions. Level B does the same, but some of these have FAA waivers that let you log landings as well. Level C gives you credit for approaches, including circling-to-land maneuvers, plus takeoffs and landings—including the use of thrust reversers. Level D is the most faithful to a specific airplane's aerodynamic behavior—even

in ground effect—and allows full credit for all the above, in day, night, or dusk conditions. Learn in a Level D simulator and you can legally step from flying the simulator to flying the real airplane.

For this month's "Turbine Pilot: Sim Warmup," we spent some time observing specialized training in Simcom's new TBM 930 simulator. Like the company's TBM 700, TBM 850, Pilatus PC–12, and Mitsubishi MU–2 simulators, this simulator cab *doesn't* move. Instead, Simcom uses a widescreen, wraparound visual system that has three huge Sony projectors and an RSi Visual Systems display with its own geographical data. Maneuver the airplane, and the visual system projects corresponding imagery that rolls, pitches, and yaws like the real thing.

Some pilots downplay the quality of this visual-only motion. I disagree. Although the cab (containing an actual TBM 930 cockpit) may not move, the body plays right along when that Panavisionlike view out the cockpit moves in response to control inputs. You swear that *you* are moving, and even "feel" G forces that don't really exist.

No, there's no credit for takeoffs or landings. But there's something wrong if you got this far along in your flying career without having a pretty darn good native judgment of the sight picture when the wheels meet the runway.

Simcom fills a vital niche when it comes to training services for legacy airplanes such as Piper Cheyennes, Twin Commanders, IAI Westwinds, Lear 30/35s, Cessna Conquest I/IIs, and Hawker 800s—all of which use fullmotion simulators.

But to bash Simcom for its "nonmotion" simulators is a waste of energy. AOPA

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TURBINE PILOT

SIM WARMUP

Coming to terms with quirky procedures

BY THE TIME YOU'VE REACHED the stage where you're flying turbine equipment, you've probably done your fair share of instrument flying-and flown out of many, many airports. But it's a fair guess that you visit many of the same airports on a regular basis, and that most Americans haven't had the need to fly outside the United States. While all this is typical, it's also true that a certain cohort of the owner-flown turbine pilot population has wanderlust. Distant, exotic locales beckon, and what better than a turbine-powered airplane to get you there? Psychologically speaking, you have the means, the method, and the motive to do some exploring.

> BY THOMAS A. HORNE PHOTOGRAPHY BY MIKE FIZER

ON APPROACH TO AGABA, Jordan's King Hussein International Airport. Don't go left of the course, or you'll stray into Israeli airspace, which is empowered to employ countermeasures against intruders.



Air Journey, a Florida-based firm that specializes in escorted flying tours, has vast experience providing excursions to many locales. It even offers an annual around-the-world tour. On these trips, owner-pilots get the flights of a lifetime. They also face some unusual approaches with traps for the unwary. Yes, there's a briefing before every flight—but when faced with daunting arrival, approach, and departure procedures, the questions come fast. And later, while flying these procedures, confusion and uncertainty can ensue as pilots come face to face

the questions come fast. And later, while flying these procedures, confusion and uncertainty can ensue as pilots come face to face with the curveballs so common in foreign procedures. At the least, these strange procedures can trigger anxiety. At worst, they can compromise safety. You can brief all you want beforehand, but you're at a disadvantage when actually flying a tricky approach for the first time.

Simcom Aviation Training has come up with a better way to train for those odd foreign approaches and other procedures. At the company's Orlando, Florida, training center, Simcom offers classroom and simulator-based training that focus on the specific procedures that pilots—like those taking Air Journey's aroundthe-world trips—will fly. Now, instead of flying those wonky procedures cold, pilots can fly them on a simulator first.

I attended one such course, where around-the-world-pilot-to-be Jim Baum was put through the paces. Baum owned several Cessna 210s before stepping up to a brand-new Daher TBM 930. Last year alone, he put 400 hours on it. The day I was there, he logged a good five hours in Simcom's new TBM 930 simulator, flying some of the most challenging approaches he'll face this summer. The other five pilots in the around-the-world group—all of whom own TBMs—also have been offered this specialized one-on-one training. Simcom center manager John Warnk led the classroom session, which ran for two hours and covered three different arrival procedures and five different instrument approaches. Later, he would also serve as instructor in the simulator.

First up was the localizer approach to Runway 9 at the Kangerlussuaq, Greenland, airport (BGSF). One look at the chart and you see a big challenge right away: There is terrain directly to the left side of the final approach course. Notes sprinkled around the chart show other gotchas. Category B airplanes (such as the TBM) must use the Localizer Z approach, and end their procedure turns five nautical miles from the final approach fix—which is a whopping 10 nm from the runway threshold. The temptation is to start down to minimums right after crossing the final approach fix, but no. You have to fly another 2.8 nm before descending. And don't mistake the Sondre Stromfjord (SF) nondirectional beacon for a final approach fix. There are a few more tricky spots, too. The descent angle on the final approach course is 3.45 degrees. The steeper descent doesn't seem like much, but the view out the windshield is that of diving toward the runway. The missed approach point is 0.9 nm from the runway threshold. And the missed approach begins after you pass over a marker beacon on the runway, followed by a right turn to 107 degrees (to avoid terrain) and a climb to 4,000 feet, then holding at the SF NDB at 4,400 feet, which is the maximum holding altitude.



VMMC/MFM

NO MATTER WHICH WAY you join up with transitions and approaches to Macao International's Runway 16 or 34, you'll have to do it at 200-plus knots until short final. Maximum airspeed in turns is posted as 190 knots, but controllers may ask for speeds up to 250 knots. FLYING KANGERLUSSUAQ, GREENLAND'S localizer approach to Runway 9 means hugging terrain, a final approach fix far from the runway, a steep descent angle down final, and an early missed approach point. Some pilots run into trouble when they anticipate a glideslope that isn't there, realize it too late, then dive for the runway.

KANGERLUSSUAQ, GREENLAND Z or Y Rwy L 450 3100 092" MSA.

Yes, the TBM 930's Garmin G3000 will give you plenty of guidance along this and other approaches. But when the questions come, as they will, your attention will be diverted. And this is no time to get behind the airplane.

Next came the arrival procedures to Paris' Le Bourget Airport (LFPB). The first standard terminal arrival—PEXIR 7W—was clear enough, and could be called up on the Garmin G3000. Same with the next arrival sequence—MOBRO 4W. But after that procedure's last fix, at PG528, only a visual track is plotted. Two boxes with lost communications guidance are provided for a series of courses to Le Bourget's runways should that happen, but a pilot looking for them or any other further guidance to the approach navaids—on the G1000 or G3000 won't find it on the list of arrival procedures. Instead, they're tacked on to the beginning of the approach procedure itself. In Baum's case today, that's the Localizer A approach to Runway 25. Better to learn all this in the simulator than in the heat of battle.

Baum flew subsequent arrivals and approaches to Macao International Airport (VMMC), Petropavlosk-Kamchatsky, Russia (UHPP), and Ketchikan International in Alaska (PAKT).

For Macao, the curveball is that you'll be asked to fly the entire slam-dunk arrival and approach—up to four nautical miles from the runway threshold—at 250 knots. A request for 200 knots might be approved—but still, the TBM's V_{LO} and V_{FE} (for approach flaps) is 178 knots, so slowing down is a challenge that not all may master the first time around. The danger is that you focus too much on the landing. "Don't *ever* ignore a horn!" Warnk practically shouts. He's worried that the hustle of the approach may be so distracting

that a pilot could easily forget to lower the landing gear—even with the gear-up warning horn blaring away.

Petropavlosk-Kamchatsky's thrills include an RNAV STAR arrival procedure that takes you over the airport, random GPS outages, and a bend in the ILS Z Runway 34L that tempts you into landing on Runway 34R. And as for Ketchikan, based on experience, you *will* hold over the DOOZI intersection as part of the ILS Y Runway 11 approach, and it will be a healthy descent rate down final. Also, don't be surprised if the seaplanes at and near the seaplane base on short final generate distracting TCAS alerts.

All of these situations, and much more, can be re-created in the simulator. And Simcom's wrap-around visual system does a great job of providing every visual cue you'll need to experience lifelike scenarios—even during circling maneuvers where keeping the landing runway in sight may mean looking as far as your nine o'clock or three o'clock positions. Simcom is Daher's designated training facility and the company offers simulator training in not just the TBM 930, but TBM 850 and TBM 700 simulators as well. And in a nod to current trends, one of its TBM 700 simulators is currently being fitted out with Garmin's G600 primary and multifunction displays and GTN 750 touchscreen navigators.

Planning on some international flying featuring airports with complex procedures? It's worth asking Simcom if they can tailor a course for you. You'll minimize surprise factors and earn an instrument proficiency check while you're at it. **AOPA**

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