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## The Sublime **TBM 850** *Swifter, Sexier & Oh La La*

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# TBM 850

Scorching The Airways With Style



My rotation speed of 85 knots sweeps by in an instant, and I apply a little back pressure on the yoke to nestle the flight director's flying wedge into the command bars I preselected before taking the runway. By clicking the "Go Around" button on the throttle and selecting heading hold on the autopilot, the flight director will indicate a smart seven-degree climb angle and runway heading. Gear up, flaps up, inertial separator closed, and sometimes at this point, autopilot on and holding 130 knots indicated—a good climb speed. Through 1,000 feet, I ensure the torque is a touch less than 100%, move the flap lever up to the 850 detent and bring torque slowly up to its new max value of 121.4. On takeoff and in terminal operations, the TBM 850 is identical to the TBM 700 and automatically torque-limited to 100%. With the flap switch in the 850 detent, I'm the torque limiter, and I better be careful, lest I risk an over-torque down low or an interturbine overtemp up high. Either excursion beyond POH-specified parameters will precipitate a visit to maintenance and possibly the need to write a big check.

As we settle into a 2,800 fpm climb to flight level (FL) 270, I reflect on why I'm even here, newly certified and flying a \$2.8 million TBM 850 that I'd love to adopt and give a good home.

During a pilot's flying career, there are always a few flights that stand out as notable and unforgettable. In the summer of 2006, I had one of those flights when I flew another even newer TBM 850 from the factory in southwest France across the North Atlantic to New York City via Wick, Scotland; Reykjavik, Iceland; Sondre Stromfjord, Greenland; Goose Bay, Labrador, Canada; and Bangor, Maine. On that flight, though I learned a lot about the aircraft in the 18-ish hours it took to get to New York, my interest was also piqued, as I became curious about how easy or difficult a formal transition to the TBM 850 would be for a typical high-performance/technically advanced aircraft-conversant (TAA) piston pilot like me. My experience? In the past few years, among the numerous aircraft I've flown for various stories, I've been through formal training on the Garmin G1000 and I've accumulated over 400 hours in the Cirrus SR22, with about

**Though the panel may look complex, it's arranged logically with ergonomic consideration and has a professional feel.**



Jeff Berlin

## MEET SOCATA'S ANSWER TO THE VERY LIGHT JET

By Jeff Berlin  
Photography By Paul Bowen

**W**hoa, the simulator at SimCom never accelerated like this! I've just advanced the throttle of N850LA, a brand-new EADS Socata TBM 850 with barely 100 hours, and I feel like I've floored the gas pedal in a candy-apple red 1969 Chevy Camaro with a big-block V8. Sure, the sound is different, but I'm pinned to my seat all the same. That this TBM also happens to be candy-apple red makes sense, and if there were such a thing as airway police, they'd surely be gunning for this sweet ride. I know I am.

This is my first takeoff in the real, live airplane after my week of TBM initial training at SimCom in Orlando. So after bringing up the engine's torque to 40% for a quick check to ensure gauges are in the green and I'm good to go, I ballpark the throttle to around 95% torque and start to rocket down the runway like Big Daddy Don Garlits in a top-fuel dragster. As the TBM's Pratt & Whitney PT6A-66D quickly spools up and gathers its head, I've got one eye on the runway centerline and the other watching my power. As I finely nudge the torque to 100%, trees and white stripes wash into a blur.





300 of those hours in 22s equipped with the Avidyne Entegra glass cockpit suite. So somewhere out over the Atlantic, I began to wonder, as I learned the lay of TBM land, has the time I've spent tooling around in high-performance/TAA given me a leg up for transition? See the accompanying sidebar for details of my SimCom experience, but for now, let's go to France...

Having lived in Paris for two-and-a-half years, I always look forward to visiting France, and having never been to Gascony, I felt a palpable anticipation before my visit to EADS Socata in that region of France, famous for the epicurean delights of foie gras and Armagnac.

The TBM factory at the Tarbes airport is tucked away among lush farms, golden, rolling hills resembling Van Gogh's *The Harvest* and towns like nearby Ossun, seemingly unchanged since medieval times. This region of France is achingly beautiful, and I'd highly recommend a factory visit for any TBM pilot.

Back at Socata, I discussed the TBM 850 with the ever-smiling Philippe de Segovia, Socata's Director of Communications. "The TBM 850 is Socata's answer to the VLJ, and it's available now," says Philippe. "We surveyed past and current TBM owners, and 90% wanted more speed and one-stop transcontinental range, from Los Angeles to Florida, for example. Our advantage is that that range and performance will come at a lower altitude, below airliner traffic, and at a lower direct operating cost than the typical VLJ. The TBM owner [the TBM is optimized for the owner/pilot] is feeding only one efficient and dependable Pratt & Whitney PT6A engine and maintaining an aircraft with simple, reliable and robust systems."

Simple, reliable and robust—I'll attest to that. As I saw on my tour of the assembly line, the TBM is constructed to be one stout airplane. And as I later learned at SimCom, the systems are free from the alchemy and complexity I expected before my turbine transition. The craftsmen at the factory are real artisans who work in the same roles and on the same parts year after year.

So what makes a TBM 850 an 850 and not a TBM 700, which until last

year, had been in production since 1991? The TBM 850, as I mentioned during our takeoff, is identical to the TBM 700 around the airport in that the engine is torque-limited to 100% torque with a 10% buffer, maxing out at 700 shaft horsepower, a measure of the power delivered to the propeller shaft. On climbout, when the 850 detent is selected, max allowable torque is bumped up to 121.4%, and 850 shaft horsepower becomes available. One flies the TBM like a jet—by the book. As such, TBM pilots consult a table in the *POH* to set climb power according to a schedule to avoid engine and/or gearbox damage from excessive torque or ITT temps.

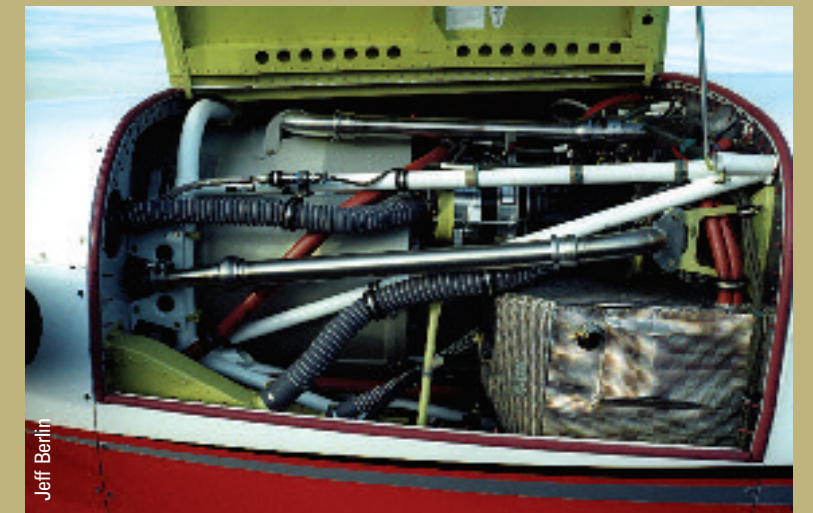
Another distinction is that the TBM 700's PT6 bleeds air from only one station, P3; in the 850, however, Socata engineers tap bleed air from two stations, P3 and P2.5. P3 air is higher-pressure air and is bled from the combustion chamber inlet after the centrifugal impeller. P2.5 air is lower pressure, tapped from an earlier compressor stage, and only kicks in above 80% torque. Naturally, the farther air travels into a turbine engine, the more compressed it becomes. This compressed bleed air is tapped for cabin pressurization, to heat and cool the cabin, and to cycle the deice boots. It also controls the Woodward fuel control unit. During typical cruise settings, by tapping only P2.5 above 80% torque, less compressed air is bled, and the engine can produce more power, contributing to the 850's speed advantage over the 700.

What this all means to you and me, in real-world numbers, I found out on my flights from DeKalb Peachtree Airport (PDK) near Atlanta to Savannah, Ga., and back. Climbing out of PDK, the outside air temperature was 12 degrees Celsius and we were burning fuel to the tune of 79 gallons per hour.

At FL270 and about 74 miles from Savannah, I consulted the Max Cruise (ISA+5) chart and set torque to 107%. The prop was already at 2,000 rpm, the recommended setting for all operations. It was minus-21 degrees C and we were indicating 200 knots, truing 313 or Mach .506 and going through gas at 59.5 gph—about three gallons better than book. Had the outside temp been standard



The larger, electrically actuated door carries over from the TBM 700C models.



Under the hood, the titanium P2.5 and P3 bleed air tubes are plainly visible.



The cabin comes trimmed in high-quality materials and offers ample legroom.

**S**imCom is the factory-approved and insurance-mandated training center for the TBM 700 and 850. On my first day there, I began to think, “Uh oh, what did I get myself into?”

But SimCom has the training process down. My instructor for the week was Jerry Chipman, the TBM program coordinator and an ex-U.S. Air Force pilot who’s been flying for about 51 years. Right. Time to enter sponge mode.

The courses are well structured, and though I was a bit skeptical of the fixed-base, level-five flight-training device in the TBM program, its faithfulness to the real thing became apparent later, when I had no problem jumping into the actual airplane, starting up and going flying. I needed no prompting whatsoever from Socata’s Mike Sarsfield.

Each day began at the ungodly hour of 8 a.m. with academic work that dissected aircraft systems and procedure according to the operating handbook. SimCom uses effective visual aids to cement its students’ information retention. SimCom could probably build its own *Flight of the Phoenix* from all the various aircraft parts it has on hand to tangibly demonstrate systems and component function.

We also had a two-hour simulator session each day that literally flew by. The sim is constructed from an actual TBM 700 cockpit, and SimCom is planning to upgrade it to reflect the 850 as we speak. With each sim session, my cockpit flows improved until, at the end of the week, I was able to get up and going in the TBM by following my flows and memory only. These sims, though fixed-base, also do a pretty good job replicating flight dynamics and emergencies, and I guarantee that in the heat of the moment, you’ll almost think you’re flying.

In the end, for this up-to-now piston pilot, I found the SimCom program an effective way to get up to speed in the TBM 850. As my instructor Jerry Chipman emphasized numerous times during the week, if a pilot comes into the program with a good base to build upon, and if he or she brings a good, working knowledge of the Garmin GNS 430/530, he or she should have no issue with the transition. As he likes to say, “If you can fly the simulator well, you can fly the airplane really well.” It’s true, and I did.



Jeff Berlin

ISA, at our lighter weight, the book says we’d be trueing 319 and burning 64.6 gph of Jet A. In the TBM 700C2 under the same ISA +5 conditions, the book says we’d be scooting along at 294 knots true and burning Jet A at 52 gph.

With the pressurization set to 28,000 feet—altitude +1,000—the TBM’s 6.2 max-pressurization differential was resulting in an 8,200-foot cabin at FL270. As we neared SAV, we requested and were granted an emergency descent from ATC to roughly 8,000 feet. To mountain climbers on peaks like Everest, the death zone starts at 26,000 feet. It’s called the death zone because above 26,000 feet, or FL260 to us pilots, there’s not enough oxygen to sustain human life. Had we experienced some kind of pressurization failure, such a

descent would get us down to breathable levels right quick. Pushing the nose over and banking a bit to spill lift, we nudged the 266-knot red line and clocked 8,000+ fpm down on our way to thicker air.

Ninety knots on short final to runway 09 and prop to reverse on rollout had me making an early turnoff from the long strip. As I found on my trans-Atlantic voyage, the TBM 850 in the airport environment should be a breeze for any competent pilot managing the systems of high-performance piston/TAA singles or twins. Sure, engine start and management are turbine-specific, but overall—no sweat.

After refueling, my companion Michael Sarsfield, Socata’s Director of Sales for the southeast, manned the

radios, and we requested an unimpeded and direct climb to FL280. Blasting off from Savannah’s runway 36, we told ATC that all we cared about was climbing unimpeded, the direction didn’t matter. Eight-and-a-half minutes later and holding 130 knots indicated and 765 degrees ITT through the climb, we were passing through FL180, where I pushed (STD) on the RVSM-compliant altimeter. The engine in the TBM 850 will put out full-rated power until about FL250, which is another advantage over the 700. As the King KFC325 autopilot captured FL280, we were 14.5 minutes from brake release and had gone through 21 gallons of Jet A out of 281.6 usable. Not too shabby.

The TBM is a pleasure to hand-fly. Control feel is smooth and tight with-



The TBM 850—sleek, harmonious in form and function, and stable in the instrument environment.

## SPECIFICATIONS



**Name:** EADS Socata TBM 850  
**Base Price:** \$2,576,930  
**Engine:** PWC PT6A-66D turboprop  
**Horsepower (shp):** 850  
**Max Ramp Weight (lbs.):** 7430  
**Max Payload, Full Std. Fuel (lbs.):** 849  
**Wingspan (ft.):** 41.60  
**Fuel Capacity (gals.):** 281.6

## PERFORMANCE

**Max Certified Altitude (ft.):** 31,000  
**Max Range (nm):** 1520  
**Max Cruise Speed (kts.):** 320  
**Takeoff Distance (ft.):** 2840  
**Landing Distance (ft.):** 2430  
*(Source: EADS Socata)*

out much friction. To achieve the FAA-mandated 61-knot stall speed for a single, fowler flaps take up most of the wing's trailing edge. As such, the TBM's ailerons are rather short. To increase aileron effectiveness, they're assisted by spoilers. In this 7,430-pound-gross airplane, trim was definitely my friend, especially rudder trim, as after power changes, I'd click off the yaw damper and recenter the ball.

The TBM is also, thus far, the easiest plane I've ever had the pleasure of escorting down an ILS. The King autopilot is simple to operate after minimal study, and ILSs, both coupled and uncoupled, were cake—operationally and knobologically, at least.

And speaking of knobs, I asked Nicolas Chabbert, President of Socata in the United States, if they've got any plans for the TBM 850 to sport a glass cockpit anytime soon. "Availability of a reliable and an easy-to-transition-to avionics suite is more important to Socata than being first to market a new technology," he said. "We have continued to enhance the avionics on the TBM in line with this

policy, and the positive response from our user base indicates that we have made the correct decision."

Indeed, it was hard to find fault with the TBM 850 besides an electronic attitude indicator that slightly washed out in bright, direct sun and an armrest for the pilot's left arm that could be a good five inches higher. I'd also love a more precise way to manually fine-tune my altitude in small increments while on autopilot, as is possible with the S-TEC 55X. These days, aesthetics and ergonomics also play a big role in aircraft design, and the folks at Socata hit the "looks" nail on the head, as the TBM 850 is one sexy and fashionable airplane. Its capability also turns heads, as its balance of short-field performance, its ability to stretch its legs like a VLJ in both speed and range, and its relatively simple single-pilot operation make the TBM 850 an extraordinarily compelling aircraft. I want one.

PJ

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