The Step-Down Fix

by MATTHEW McDANIEL

Onex Tricycle and taildragger aircraft in formation over Lake Winnebago, near Oshkosh, Wisconsin.

Author's Note: As this article was originally going to press for the last issue, Sonex CEO Jeremy Monnett and a new Sonex employee were tragically killed in an aircraft accident that is still in the early stages of investigation. Out of respect, this article was pulled. Now, out of equal respect, this article appears with no changes to how it would have been published then, aside from this note. My deepest sympathies to the families and employees of Sonex Aircraft as they cope with their loss and press on – just as Jeremy would have wanted.

In publications similar to this, it is commonplace to read articles about complex IFR procedures and the technicalities that go along with them. It is equally common in type-club magazines to read about larger, faster, more capable aircraft that one might eventually consider stepping up to. What you are about to read has nothing at all to do with instrument flying and, if anything, is the antithesis of a step-up aircraft article. The step-down fix I'm referring to is not part of an instrument approach. It is the cure for the blues that often inflict pilots who've become singularly focused on flying their high-performance aircraft and staying proficient in all the information and skills required. Along the way, some aviators begin feeling that flying has lost some of its joy. Other aviators eventually reach a point in their lives where flying powerful, complex aircraft may no longer be necessary, economically feasible or medically possible. Still other pilots, like myself, enjoy the juxtaposition of maintaining an assigned Mach number in the flight levels one day, while commanding the simplest of flying machines the next. Whatever your situation, somewhere out there in the aeronautical universe is the antidote to nearly any case of pilot blues ... your step-down fix.

The Spirit of Simplicity

Over my years of Cirrus instructing, I've formed many lasting relationships with Cirrus owners near and far. A few own and fly other types of planes, as you've seen me profile in these pages many times. Others often asked for my suggestions on

what aircraft they might consider for missions their Cirrus is not ideal for, such as economical leisure flying, aerobatics, tailwheel, or flying without a valid medical certificate. For simpler, relatively inexpensive forms of flying, the choices are almost endless, but there are few companies out there that offer a whole lineup of aircraft that can each fill several such missions. One exception is Sonex Aircraft, based in Oshkosh, Wisconsin.

Of course, any aviation company based in Oshkosh (OSH) is going to automatically be associated with the EAA and the aviator's Mecca it created (EAA AirVenture – world's largest annual fly-in/airshow event). While Sonex and the EAA have many mutual concerns, any official affiliations end there. Sonex Aircraft, LLC's line of simple, yet nimble, aircraft can fulfill the desire of nearly any pilot looking to recapture that elusive element that led them to writing checks for flight lessons in the first place ... the FUN! On a recent visit to Sonex's facility at OSH, I was able to sample, first hand, this variety of smile-making machines.

The company demonstration Sonex Sport Acro (SA) has a smoke system (always a plus for photo ops and fly-bys) and a 100-hp AeroVee Turbo engine.

The tailwheel version of the single-seat Onex, folding wings are standard.

The first customer completed Waiex (kit #024) sports a bold paint job to accentuate its pleasing lines and sporty performance.

Hall of Fame History

Sonex Aircraft's history has deep roots in the sport aircraft movement, dating back to the 1970s. Company founder and President, John Monnett, is an EAA Homebuilder's Hall of Fame aircraft designer and builder, whose designs can be seen not only in the EAA AirVenture Museum, but also in the National Air & Space Museum's Udvay-Hazy facility. I first became aware of Monnett's designs in the mid-1980s, when a local pilot completed a Moni Motorglider. Fans of air racing may be familiar with John's speedy Soneri-series designs and/or his Monex Racer, all of which had impressive success in Comparative Aircraft Flight Efficiency (CAFE) races, Reno-style racing, as well as various record-setting endeavors. In all, Monnett has developed dozens of aircraft and engines in his 40-plus years as a designer, builder, A&P mechanic, and multi-thousand-hour private pilot. His experience shows in the superb flying qualities of the current lineup of Sonex aircraft.

As is so often the case in aviation, Sonex Aircraft is a family affair. Betty Monnett is the company CFO, while son, Jeremy, left an engineering position at a little aerospace company known as Boeing, to become the Sonex CEO. Jeremy's enthusiasm for the family business is genuinely infectious and a common trait among all the employees I interacted with at the Sonex headquarters/R&D facility, known as "The Hornet's Nest."

Variety is the Spice of Life

By now, I'm sure many of you who are not familiar with Sonex are wondering two things: First off, yes, these are factory built aircraft, but they are built as kits that must be assembled, post-purchase. Therefore, they are certified in the experimental/amateur-built category, and, if necessary, can be operated under Light Sport Aircraft (LSA) rules for those who wish to fly without a medical certificate. Because customization opportunities are infinite, assembly time varies with the builder's time commitment and experience doing things of a mechanical nature. Sonex Aircraft has designed simple aircraft with advanced kits, easing the building process via a combination of laser cut, machined, and stamped parts, with pre-drilled holes and hole-matched parts. Much of the repetitive grunt work is done at the factory and quick-build kits are also available to further reduce assembly time. Over 500 Sonex aircraft are currently flying worldwide, emphasizing the high completion rate of kits sold. If you choose to do the work yourself, you can obtain a Repairman's Certificate and perform all your own maintenance and inspections. Secondly, yes, there are many choices, each offering unique qualities and multi-dimensional mission capabilities.

The Onex

Pronounced "One X," this is the plane I could see many current Cirrus owners being attracted to as a second aircraft. As a single-seater, it is no replacement for a Cirrus, but would be an ideal solution for those looking for inexpensive flying (think four gph fuel burn) with spirited performance. With 80 hp on tap and a gross weight of 950 pounds, its

power-to-weight ratio is similar to the SR22. Not only is it fully aerobatic, it practically leaps off the runway, and achieves a pleasing balance of crisp maneuverability without being overly sensitive, much like the Cirrus lineup. It can also be flown 500-plus miles at true airspeeds (TAS) of 135-155 mph! I found it roomy and comfortable and a pure joy to fly (and to be the most docile taildragger I've ever flown). The Onex can be built in tricycle or tailwheel configurations. Best of all, it has folding wings that allow it to be stored inside a standard T-hangar alongside your Cirrus (Figure 1), or in a single garage stall at home. The wing folding/unfolding process takes one person less than a minute!

Sonex Sport Trainer (ST) and Sport Acro (SA)

These two-seat, standard-tail aircraft are essentially the same machines with minor mission-specific differences. All are designed to accommodate 80 to 120 hp and tricycle or conventional landing gear. While cruise speeds and fuel burns vary slightly with horsepower, all typically achieve TAS's of 130-135 mph at sea level and 150-170 mph at 8,000 feet MSL. On four to six gph, range varies from 400 to 550 miles, making them equally adept at economical cross-county cruising or local dawn patrols. The ST is designed to be a trainer, so it has dual control sticks and centrally mounted power, flap, and brake controls. While the SA has a left-side mounted power quadrant for more traditional hand placement during aerobatics. The Sport Acro's longer-aileron/shorter-flap configuration increases the already sporty roll rate from 80 degrees/second to 105-plus degrees/second, allowing for slightly more aggressive aerobatics. While the SA is specifically optimized for aerobatics, all Sonex airframes are stressed for aerobatic flight, and have been stress tested well beyond those limits in controlled ground testing. That's an important point to me, because whether aerobatics is your thing or not, you'll rest easier knowing that while all Sonex piston-aircraft might meet the definition of LSA, their airframes are designed with structural integrity as a priority.

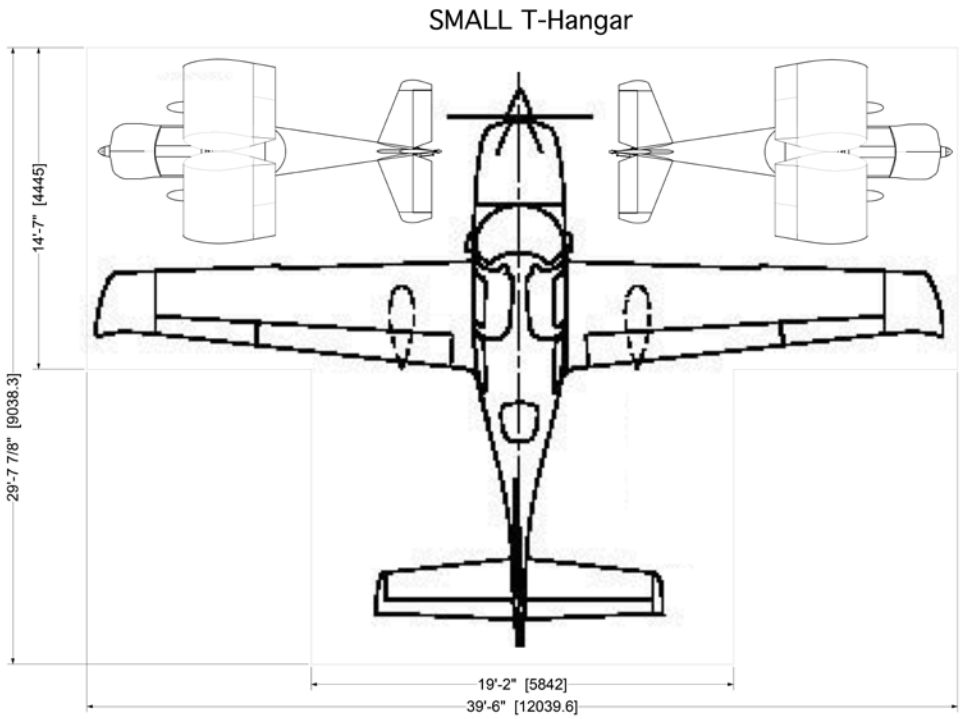

Figure 1: Even in the smallest T-hangar you can squeeze an SR22 through a 40-foot door, and still have enough extra room for two Onex aircraft, due to their folding wing design. The Onex can be repositioned with ease by one person. A 40 x 40-foot box hangar can accommodate an SR22, plus a Sonex/Waiex and an Onex to boot. Ease of storage is one of the many benefits of the compact Sonex designs.

The author, after checking out in the Waiex. The Y-tail design is purely for aesthetics and offers no performance, handling, or weight advantages/disadvantage over the standard-tailed Sonex designs. However, the Waiex's good looks have proven popular with buyers seeking unique "ramp appeal."

Another beauty of the Sonex line is that the features of one variant can cross over to others to satisfy the personal desires of the owner/pilot. Nothing precludes configuration specifics from being utilized in similar models (using SA ailerons on the ST, for instance, or tailwheel versus nosewheel landing gear). Choose your priorities and assemble accordingly.

The Waiex

If ramp appeal is your thing, the "Y-X" may be your reintroduction to inexpensive and simple flying fun. While it differs from the basic Sonex only in its use of a Y-configuration tail, that difference makes a bold aesthetic statement. Much like the Cirrus, the Waiex draws a crowd on the tarmac. Otherwise, it can be customized with any of the configurations discussed for the SA and ST models. My Waiex flight was in a tailwheel, dual-stick, 80-hp version with sidewall-mounted power controls. Everything fell naturally to hand and it was impossible to tell the difference in control feel between the Y-tail and the standard-tailed ST I'd flown the previous day.

This was even the case in yaw, with both configurations displaying far more directional control than any other aircraft I've flown in this weight class. So much so, that landings with direct crosswinds of 15 knots proved well within the available control authority – another rarity in aircraft of this weight class. The Waiex can do anything any variation of the Sonex can do (including aerobatics) and does them with dashing good looks.

The Xenos

Sonex backwards is Xenos ("Zee-nos") and, as the name implies, this design turns convention on its head. The Xenos is economical flying and versatility personified. Resembling the Waiex, but stretched in every proportion, the Xenos can be flown as a self-launching glider, providing hours of free soaring without the hassle of tow-planes and ground crews. When desired, it can be operated as a standard powered aircraft, or flown at fuel-sipping efficiency by pulling the power WAY back and motor-soaring. While the wingspan of the Xenos looks enormous on the diminutive airframe, it is in fact, only five feet longer than an SR22's wing. The wingtips can be quickly removed (reducing the span to under that of an SR22) for storage in 40-foot hangars. Shorter, interchangeable wingtips give the Xenos aerobatic capability, as well.

Power to the People

One of the most surprising elements of my Sonex flying was the engine. Small kitplanes have a long history of engine choices that make many pilots cringe, myself ▶

The long wings of the Zenos (shown below) announce that it's meant for economical soaring fun, but its Waiex lineage is unmistakable.

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Not to be confused with a two-surfaced V-tail, the Y-tail of the Waiex and Zenos models incorporates two sizable ruddervators atop a small stub-rudder. Together, they provide powerful yaw control. All tailwheel Sonex models have steerable (but non-castering) tailwheels, making them very docile taildraggers indeed.

included. Sonex designs stay with more traditional options. The AeroVee 2.1 is an 80-hp engine that can be used in all the aircraft discussed so far. While it is a VW-conversion in design, it is also an air-cooled, horizontally-opposed, direct-drive, four-cylinder engine that looks, starts, runs, sounds, and feels like any similar horsepower certified aircraft engine. Available fully assembled or as a kit, the AeroVee's components are all newly-manufactured, zero-time parts and the engine is designed to run on 100LL or auto fuel. Best of all, it's a fraction of the cost of a comparable certified engine, and can be overhauled for a few hundred dollars in readily available parts! For those who feel there is no substitute for horsepower, and really, who doesn't, there is also an AeroVee Turbo option. Not only does the Turbo offer a 25 percent horsepower boost at sea level, it can maintain 100 hp to well above typical cruise altitudes, generating impressive TAS's. In the Waiex, for example, the Turbo allows 175 mph cruise at 8,000 feet MSL and when run at wide-open-throttle (38 inches MAP @ 8,000 feet) has pushed the Waiex up to 187 mph TAS in level flight test runs.

There are also two Jabiru engine options – the 2200 (80 hp) and the 3300 (120 hp). While I didn't fly a Jabiru-powered Sonex, I've flown Jabiru powered LSAs in the past. They are easy-starting, smooth-running, and reliable aircraft engines, but are far more expensive initially and have slightly higher fuel burns than the AeroVee options. The 120-hp Jabiru 3300 engine generates the highest aircraft performance at sea-level, but the AeroVee Turbo gains the advantage at higher altitudes. As with the various Sonex airframes, I came away impressed with both the quality and the variety of engine options available to Sonex customers.

T-Flight Training

As Cirrus pilots, we've come to expect quality type-specific training. Sonex is one of the few light kitplane manufacturers offering specialized customer training; both initial and recurrent. Joe Norris is the chief instructor for Sonex's T-Flight Training Program, which he also developed and ushered through FAA certification. While all Sonex designs incorporate simple systems and predictable flying characteristics, there is no substitute for good training with an instructor experienced in type. Joe fits that description perfectly and my time with him was not only educational, but very enjoyable. After a checkout in the Sonex ST (tricycle) and the Waiex (taildragger), I flew the single-seat Onex (tailwheel version) with no angst whatsoever, thanks to Joe and his T-Flight course. The whole experience was rewarding from beginning to end, reminding me again that the joy I get from flying simple/sporty aircraft is every bit as satisfying to me as a well-flown ILS approach to minimums in an Airbus or adeptly programming and executing a complex flight plan in a Cirrus. They each satisfy different parts of my pilot brain and I don't think I'm unique in that regard.

The Social Network

As COPA members, the social aspect of our flying cannot be overstated. While many aircraft have generated type-clubs for information sharing, few are like COPA with its multi-faceted social, informational, safety and educational programs. Whether considering the choice of a step-down aircraft to add to your Cirrus hangar, or envisioning a future where your Cirrus can no longer be justified, there is a Sonex community similar to COPA waiting to welcome you. The Sonex Builders & Pilots Foundation (*www.sonexfoundation.org*) and the American Sonex Association (*www.americansonexassociation.org*) are the two largest such organizations offering social and educational services to Sonex pilots. Regional organizations exist, as well. Regional fly-ins, gatherings, and events abound, bonding the Sonex community in a way we COPA members are very familiar with. Finally, Sonex Aircraft, LLC is very in touch with and supportive of its owners/builders/pilots. Not only is this apparent on their company website (*www.sonexaircraft.com*), it is obvious from the feedback and thanks they receive (which is hard to miss when reviewing the many personal stories, blogs, and websites posted online from Sonex owners).

Of course, I wish we could all own and fly Cirrus aircraft forever, but I know that is not realistic. Nor is it realistic to believe that all Cirrus owners will be able to step up to turbine or pressurized equipment. It is also an inevitable reality that some Cirrus owners will face boredom, burnout, medical issues, financial issues, etc., that force them to

look elsewhere to scratch their flying itch. Whether as a supplemental aircraft or a final step down fix, the Sonex line of aircraft offers unique opportunities to keep us flying more often and longer and to maintaining proficiency in that always-important element of our flying ... the fun!

Author's Note: Those familiar with Sonex may be wondering why this article ignored their latest design, the SubSonex. Simply, the jet-powered SubSonex didn't fall into the category of an economical, multi-mission LSA that I was hoping to introduce to Cirrus Pilot *readers.*

Matthew McDaniel is a Master and Gold Seal Flight Instructor, ATP, CFII, MEI, AGI, & IGI and Platinum CSIP. In 25 years of flying, he has logged over 15,000 hours total, over 5,500 hours of instruction-given, and over 5,000 hours in all models of the Cirrus. As owner of Progressive Aviation Services, LLC (www.progaviation.com)*, he has specialized in Technically Advanced Aircraft and Glass Cockpit instruction since 2001. Currently, he also flies the Airbus A-320 series for an international airline, holds six turbine aircraft type ratings, and has flown over 80 aircraft types. Matt is one of only 25 instructors in the world to have earned the Master CFI designation for seven consecutive two-year terms. He can be reached at* matt@progaviation.com *or (414) 339-4990.*