Sport Aviation

Craig and Sandy Gainza's *Pirate Cub*

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Photography by Michael Steineke

Pirates

"IT'S NOT EVERY WOMAN whose husband will spend three years building her a plane," Sandy Gainza said. A commercial pilot, Sandy fell in love with her husband Craig, EAA 535956, more than three kids ago. Next, she fell in love with the American Legend Cub after riding in one in 2009.

Craig watched her take her ride and observed, "She came out of the airplane grinning ear to ear." Next, Craig tried on the plane and was pleasantly surprised that he fit—in the front and back seats. At 6-foot, 3-and-a-half inches tall, he was used to cabins being too small for him. When he had sat in an original Piper Cub, his knees had been pressed against the instrument panel. The Legend Cub that Sandy liked had a cabin that's 28.5 inches wide by 50 inches tall.

Craig and Sandy Gainza

Aside from Sandy's enthusiasm and Craig's roomy fit, a few other considerations tipped the scale in favor of buying the kit version of the Legend Cub, called the Texas Sport. For one thing, the Gainzas' youngest daughter was off at college, so the couple would have more time to build and fly. Plus, Craig and Sandy had built a Lancair and were looking for "the anti-Lancair," an airplane that would be completely different. A periodontal dentist by trade, Craig has an unusual motivation for building airplanes after work: "I spend my whole day working inside a 3-inch hole. I wanted to spend the rest of my time working on something bigger."

So after a careful consideration of all the factors (but really justified by making Sandy happy), Craig told her, "If you want this airplane, I'll buy it." Sandy said, "I could see he wanted to build one." It was settled. The Gainzas ordered a Texas Sport kit in 2010.

Here's the way the purchase works. American Legend Aircraft Company builds factory-complete aircraft, including the Legend Cub. The Legend Cub airplane has been certificated as a special light-sport aircraft (S-LSA) and is used by a number of flight schools for tailwheel training, among other things. The American Legend Aircraft Company also sells kits. The kitted airplane is called the Texas Sport (sometimes called the Texas Sport Cub). When the company gets an order for a kit, they pull one of their uncompleted Legend Cub airplanes off the line. Since the Texas Sport that is to be assembled by the user

The Gainzas' Pirate Cub is the E-LSA version of the American Legend Aircraft Legend Cub. A big advantage of E-LSA is that any owner, including non-builders/second owners, can take a 16-hour repairman training course to become the repairman for that aircraft. The downside is the aircraft must be built exactly like the S-LSA version without modifications.

Photography by Michael Steineke

In addition to traditional round instruments, Craig added a Garmin G3x flight display and TruTrak autopilot.

is not built by the factory, it is not a certificated S-LSA like the finished factory-built planes. Instead, the amateur-assembled aircraft must be certificated as an experimental light-sport aircraft (E-LSA), and must conform to one of the factory-built S-LSA.

As a side note, just because you assemble the E-LSA airplane, you are not the repairman. To get a repairman certificate, you must take a 16-hour training course.

The Texas Sport is constructed very differently than the Lancair; instead of using composite materials, the builder constructs the plane mostly out of aluminum. Two items inside the cabin of the Gainzas' new airplane look decidedly nonaluminum. The immediately obvious one is the wooden floor. It is the color of maple and is absolutely perfectly finished—shiny enough to make me put on my sunglasses. The other nonaluminum parts were the carbon composite wing roots, interior door thresholds, and window pillars. Oops! Those weren't composite—they were decals from a Pep Boys automobile parts store.

In addition to the differences between building the Lancair and the Texas Sport, there are significant differences in flying the planes, too. Sandy, a conservative pilot, was interested in a plane with a lower in-flight workload. "There's nothing like the Lancair to get to Oshkosh in one stop, but it's a lot more pressure to fly," she observed. The air traffic control workload involves a lot of talking, and handoffs come quickly at such fast airspeeds. The Lancair cruises at 330 mph.

Craig was also thinking about the speed differences in flying the Texas Sport. "There's something romantic about flying

Craig Barnett of Scheme Designers (www.schemedesigners.com) created the Pirate Cub logo for Craig and Sandy.

low and slow, especially late in the day," he said. Sandy agreed, saying, "The Lancair is exciting and beautiful, but I have a 100-mile-an-hour brain."

Other differences from the Gainzas' Legend Cub include the Lancair power (100 hp versus 350 hp), gross weight (1,320 pounds versus 3,550 pounds), useful load (475 pounds versus 1,350 pounds), two-person versus four-person seating, cruise speed (97 mph versus 330 mph), and stall speed (35 mph versus 75 mph).

A few things are the same between the Gainzas' Lancair and the new plane. Both have a 35-foot wingspan and a

The cabin of the Legend Cub is 28.5 inches wide and 50 inches tall, much roomier than the original Piper Cub.

Craig chose the optional Continental O-200D engine because of his good experience with the Continental engine in their Lancair IV-P.

comparable length—22.5 feet versus 25 feet. The most obvious similarity in Gainzas' airplanes is the outstanding workmanship that the two planes share. Their Lancair IV-P won the reserve grand champion award in 2006, and their Texas Sport was named a kit champion (Bronze Lindy) at EAA AirVenture Oshkosh 2013.

Craig said that the Texas Sport's amazing finish was more difficult than that of the Lancair. "With composites, I can fill and sand the mistakes," he said. "The fabric world is not so forgiving." Craig's commitment to outstanding workmanship is round-the-clock: "I'm a perfectionist; I couldn't sleep at night if I didn't do a great job on the teeth I work on. It's like that with the airplanes I build; I couldn't sleep at night if it wasn't just right." He reports that his perfectionism is for himself: It isn't so important to him that others are impressed with his workmanship—it's important to *him* to make a nice-looking airplane.

After Craig ordered the Legend Cub kit, he knew that he needed to educate himself on a new construction technique: fabric covering. He took a fabric covering workshop at AirVenture and realized he needed to learn a bit more. So he called up the local junior college and got four more days' instruction from one of the teachers. The admittedly perfectionist Craig observed that the instructor wasn't very careful.

When Craig was notified that his Texas Sport kit was ready for delivery, he opted not to participate in the company's three-week fast-build program, saying that, "Part of the enjoyment of this experience is the build." He moved the kit into the shop in the garage that he had used for the Lancair. Craig had originally built the shop there instead of in a hangar in order to be close to the family. Then he settled into a regular routine. He had Wednesdays off, and spent them building. He also worked on the airplane one full day each weekend—sometimes two. Sandy helped with the build but acknowledged that Craig did the vast majority of the work.

Craig praised the American Legend Aircraft Company for its product and service. The kit was top-notch with good quality. "It was one of the cleaner kits I've seen," he said. Craig reported that the fit and the welds were quite good.

Photography by Michael Steineke

He also said that he was pleased with the company's customer service. Craig received a manual with photos, but the inevitable questions would arise as he built. He said that American Legend answered the phone promptly and always had the answers he needed.

Craig was also impressed with the structural design of the Texas Sport. The original Piper Cub had at least one accident where the cabin was crushed from the top. The Texas Sport had been beefed up structurally to improve its safety. American Legend had put a cage over the cabin, including a bracing bar over the seats. Craig said that the bar is strong enough to handle pull-ups, and it provides a good grab bar for getting in and out of the airplane. By the way, unlike the original Cub and Super Cub, the Texas Sport has two doors.

Craig explained his choice of the 100-hp Continental O-200D. "We had a Continental TSIOF-550-E1B for the Lancair, and we'd built a relationship with Continental." This relationship carried over to the new engine. "The support was so great during the Lancair installation, I had to buy another Continental." The O-200D is very lightweight and had been chosen by Cessna for the Skycatcher. Craig gave Continental some lead time when he ordered the engine and was pleased that it arrived before he needed it.

Although Craig liked the airplane's design and kit construction, he made a few cosmetic changes to the airplane. "Cosmetic, mostly, but it's as stock as possible," he said. Craig also researched finishing materials and reduced the weight of primer and paint. He used the weight savings to put in an autopilot and upscale avionics—a Garmin G3X and a TruTrak GX autopilot. Craig, who is also a pilot, chose these specific brands because they would improve the flying experience and because Garmin and TruTrak were having a package deal at AirVenture.

The only tricky part of the build was the engine cowling. The airplane was originally designed for a 65-hp engine, but Craig's 100-hp engine was a little bigger. Getting the cowling to fit well and be straight was one of the build challenges. Craig ended up buying the cowling from American Legend.

Excellent attention to detail result in the Gainzas' Pirate Cub being named a Kit Champion at EAA AirVenture Oshkosh 2013.

The build went smoothly. Craig's day job involved working with his hands, and he carried that skill over to the Sport Cub. The project was completed in three years at Craig's two to three days per week pace.

Craig wanted to come up with a theme for the airplane. "It's a Cub, but it's really a Cub that's been modified and improved—it's been pirated," he explained. "That's where we came up with the name, the *Pirate Cub*." The Gainzas had worked with graphic artist Craig Barnett on the Lancair paint scheme, going through hundreds and hundreds of designs. Craig called Barnett and told him they had a new plane, and Barnett devised a *Pirate Cub* logo that would be used again and again: on the airplane, on the blanket the Gainzas spread on the ground for watching the air show, and also on hats. Surprisingly, Barnett got this logo right on the very first design. He also devised the graphic design for the entire airplane. Sandy had declared that the airplane would not be Cub yellow.

Once the *Pirate Cub* was completed, it was time to get it registered as an E-LSA. This part of the process did not go well. "One thing we learned was to never use the word 'kit,'" Craig said. "What we might call a kit in the E-LSA category is more accurately called an unassembled aircraft." Craig said that the FAA's "allergy" to the word "kit" is because E-LSA registration is very different from experimental amateur-built aircraft certification. "With E-LSA, you have to conform to what the manufacturer has done. That's taking parts and putting it together just like they [the manufacturer] meant for it to be put together. The experimental amateur-built category allows modifications all the way through the process." Once an applicant uses the word "kit," then the implication is that the builder might have made modifications along the way. This is not allowed under E-LSA regulations. Another registration challenge was that the FAA representative tried to convince Sandy that the E-LSA category of airplane no longer existed. Fortunately, the Gainzas were able to educate the FAA.

Even though the *Pirate Cub* was built for Sandy to fly and she has almost 1,000 hours with a commercial rating, the Gainzas decided that a professional pilot would flight-test the tailwheel airplane. "Airplanes need to be respected, just like people," Craig said. They selected Pete Zaccagnino, founder and president of High Performance Aircraft Training. Zaccagnino has flown more than 250 first flights of homebuilts and gives training either at his location in Florida or at the customer's airport. The *Pirate Cub* only required 5 hours of flight testing because of the E-LSA certificate. Sandy reports that Zaccagnino's methodology was very rigorous and organized. He completed the testing in two days and then started training Sandy to fly the *Pirate Cub*.

Sandy had prepared to fly the *Pirate Cub* by flying other taildraggers: two different types of Citabrias, an original Cub, and a Husky. When she flew the *Pirate Cub*, she found that the control inputs were easier than the other planes, and "It was almost impossible to stall. If you do, it's a nonevent." The responsive controls give the airplane a quick and easy recovery. "It flies beautifully." Craig loves flying with Sandy. "Windows open, doors down—it's such a nice feeling," he said. "She's happy flying the plane. I'm happy that she's happy." But Sandy cautions, "The main thing you have to watch out for when you're new to it is ground looping and accidents on the ground. It's not the flying—that's not complicated—but landing it is another story. I feel like I have a lot to learn on that, how to do it correctly." Sandy has landed in conditions with a crosswind component of around 10 knots, but she said that anything over 5 knots is an adventure.

Sandy flew the *Pirate Cub* to Oshkosh solo. It was a "Lindbergh moment" landing at AirVenture. Sandy had plotted her course from northern California so as to avoid the high mountains and to land at small airports without much crosswind. The airplane's 260-foot landing distance and 310-foot takeoff roll made even those small airports look big. The *Pirate Cub*'s maximum useful load of 500 pounds allowed the petite Sandy to carry enough baggage for the trip to Oshkosh. A 38-mph stall speed takes a lot of worry out of the landing experience. The flight from northern California took 24.1 hours—not bad for an airplane with a no-reserve range of 315 miles that cruises at 97 mph.

Sandy and Craig had very different motivations for participating in the *Pirate Cub* project. Sandy said she wasn't interested in building an airplane at all until the couple were halfway through the Lancair build. Although she helped a little with the building, the flying is the exciting part for her. Craig is the opposite: "Flying is the icing on the cake, but building is the cake." EAA

Lynne Wainfan is a private pilot. Along with Barnaby Wainfan and Rick Dean, she helped built The Facetmobile experimental plane, which Barnaby designed. An aerospace engineer and former manager at Boeing Space, Lynne now teaches at California State University, Long Beach.

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