

A gathering of parts

A photograph of a sunset over a body of water. The sky is a deep orange and red, with a small airplane visible in the upper right. The water reflects the colors of the sky. The overall mood is serene and atmospheric.

You can still buy a new PA-18,
but not from Piper

BY ALTON K. MARSH

Gliding to a landing over South Carolina's loblolly pines west of Charleston at less than 45 mph made me a little nervous, since I had learned to fly tail-wheel aircraft in a Piper J-3 Cub that "takes off at 60 [mph], cruises at 60, and lands at 60." But this was a 180-horsepower PA-18 Top Cub, a newly manufactured version of what the former Piper Aircraft Company called the Super Cub. Proud new owner Eric Harris Jr. could safely have flown slower than 45 mph on final approach thanks to vortex generators on the wings. ■ Out of production at Piper since the mid-1990s, Cub Crafters has brought the 45-year-old model—powered by a 150-hp engine by the end of the production run—back to life by assembling it from approved parts collected from 10 states. For example, the fuselage comes from Alaska, while the wings come from Colorado. When it is all done, the data plate on the tail says Cub Crafters, not Piper. The FAA certifies each aircraft individually after it is built, and each must conform to the original Piper type certificate. That means that the Top Cub must be test-flown for certification without many of the supplemental type certificate modifications that come as standard equipment. Those are added after certification is won.

PHOTOGRAPH BY THE AUTHOR





It hasn't always been easy to win approval. Nathan Richmond, director of sales and son of Jim Richmond, the company's owner, recalls one episode that has since been resolved. "There are new components out, such as a lightweight alternator, battery, and starter, that we incorporated into our airplane. We had been putting that combination in under a field approval. They all work perfectly in the system, but there had never been an STC to apply them to a Super Cub. We had to do the drawings and testing to be up to par with every other manufacturer." They have the STC now.

So far there are fewer than a dozen of the aircraft in customers' hands, but the production rate is growing.

The new name Top Cub is appropriate, since the aircraft far outperforms the highly popular Super Cub. Over the years there have been nearly 100 modifications approved by the FAA for the PA-18. Of those, Cub Crafters owns more than 30 STCs, and even has approval to make some of the aircraft's parts. During 20 years in the Cub modification business, Jim Richmond learned which modifications work and which don't. Now he is transferring that

knowledge to Top Cubs built in a new 20,000-square-foot manufacturing facility at Yakima, Washington, Air Terminal; the company has 25 employees.

The owner's manual provided to Harris contains copies of 19 STCs that have been installed on his Top Cub. His installed options include the vortex generators (\$1,895), a baggage door (\$695), leather seats (\$1,250), a full-width extended baggage area (\$895), a standard radio package for \$6,995, and a 180-pound baggage area in place of the normal Super Cub's 50-pound baggage area (\$295). He opted not to get the increase in maximum gross weight from 1,750 pounds to 2,000 pounds that would have cost \$3,495. He also ordered the Cub yellow paint scheme; many of the Cub Crafters Top Cubs come painted in standard white with red or blue stripes.

"The thing that sets the Top Cub apart from the competition is its empty weight and its cargo capacity," Richmond said. "Because it's lighter, it's going to be landing slower and taking off slower, therefore landing shorter and taking off shorter. It has the ability to carry 200 pounds of cargo plus the pilot and still retain its handling qualities."

As mentioned, many of the company's STCs come as standard equipment on Top Cubs. In addition to the 180-hp engine, these include nav lights; a tail strobe; landing lights; a fuel selector valve with Left, Right, Both, and Off positions; a fiberglass two-piece split cowling; an adjustable front seat; and the lightweight starter and sealed battery referred to above. Header fuel tanks that once posed a post-crash fire hazard have been eliminated through redesign of the fuel system. By the time you read this, approval is expected for use of a composite constant-speed propeller. The company is also toying with the idea of a 300-hp Cub.

The Richmonds believe that they have a lot of selling points to talk about, but what matters most is the opinion of the customer—in this case Harris. Harris is highly qualified to evaluate aircraft work.

While Harris is currently involved in electromechanical design of factory, medical, and test equipment, he is trained as a mechanical engineer. A licensed airframe and powerplant mechanic, he once built and flew a Pitts aerobatic aircraft. Then he bought a J-3 and rebuilt it. As a mechanical engineer,



he is impressed with the work that Cub Crafters and its subcontractors have done on the Top Cub. But Harris is also the owner, so it's understandable that he likes his new airplane. The tougher test came the first time he took it to his friend Jim Wilson. Frankly, Harris was a little nervous.

Wilson, also an engineer, owns the grass runway carved out of the loblolly pines where *Pilot's* test flying was done. The runway joins Wilson's front yard, which is occupied by a colonial-style home and a large hangar and workshop. He has maintained his Piper L-4 since 1968, and rebuilt a Fairchild KR-21 and a French Stampe. His current project is the rebuild of a Travel Air 4000. Wilson makes his own parts when necessary for restoration of the antiques; when engine mounts were needed for one of his projects, this Gates Rubber Co. engineer actually mixed the rubber compound.

"I was very impressed with Cub Crafters' work," Wilson said. Considering the source, that is a high compli-

Cub Crafters has recently moved into a new factory and plans to concentrate on making new Top Cubs. Previously the company's main focus was on Cub modifications.





ment. If Wilson's moonlight-through-the-pines aviation home seems ideal (except for the fire ants), Harris is no less fortunate. His company, Vencor, is located a 10-minute Top Cub flight away in Summerville, South Carolina, on the site of an abandoned airport. While the state is selling the area where the runway was for industrial development, he and two dozen pilots have managed to make a runway out of the old grass taxiway. When he gets a particularly tough engineering problem and needs a break, a large hangar attached to his company and containing his Cub is a 45-second walk from his desk. Antique biplanes share the airport. Local pilots call it Jedburg Airport, or Hooterville just for fun, but it's not on the map. A sand trap guards one end of the runway.

While the short takeoff and landing capabilities of the aircraft help with the small grass strips, they are not actually needed by Harris. He has no plans to haul a moose out of the back woods. "I just wanted basic flying, knew that I liked the J-3, and happened to see a



Cub Crafter ad," Harris explains.

Actually, it was the Cub that got Harris, an inactive pilot in the early 1990s, back into flying. He recalls going to the Sun 'n Fun EAA Fly-In at Lakeland, Florida, in a friend's aircraft and park-

ing next to a new Super Cub. It made him want to return to the fold, but he needed a biennial flight review. In the two to three years since he had last flown, the aviation world had changed from VORs to GPS navigation, and the



airspace had gotten new alphabetical designations. He bought some Gleim study materials, looked at charts with the new symbols and airspace, and returned to active flying.

The *Pilot* test flight took place as Harris finished his workday. The engineer built a lifting trolley for the tailwheel to make ground handling easier. While the Top Cub has handles on either side of the tail, you're still picking up about 130 pounds. Start-up was simple: Pump the throttle a couple of times and push the silver start button. After the avionics switch was turned on, the Garmin 250 was loaded with the C37 identifier for Wilson's private Crosswinds airport.

Takeoff lasted only a few seconds, and probably consumed no more than 250 feet. I wasn't counting. After climbing to 2,500 ft. at 80 mph, stalls and slow flight maneuvers were performed. The GPS read 32 mph during slow flight with both notches of flaps applied, but there was a slight tailwind. It was probably a bit lower than that. The standard cockpit skylight aided visibility during steep turns. A check of cruise speed at 2,450 rpm showed a true airspeed of 102 mph, but Harris said he normally plans on 110 mph TAS.

There is little exciting to report about stalls with power on and off; they were Cublike and gentle. Since the right side panel was down and the window up, we

had an informal stall warning device: The bottom panel rises as the aircraft sinks in a stall.

The same gentle characteristics found during stalls were evident during landings. My first was a three-point landing on a hard-surface runway at

Berkeley County Airport near Moncks Corner, South Carolina, where Harris refueled for an air-to-air photography session. He suggested 80 mph on downwind, 60 on base, and 50 on short final. I wasn't yet comfortable with the lower speed and decided to use 60 mph on

Model PA-18-180 Top Cub

Base price: \$129,500

Price as tested: \$139,030

Specifications

Powerplant	Lycoming O-360, 180 hp
Recommended TBO	2,000 hr
Propeller	Sensenich 76-in dia
Length	22 ft 6 in
Height	6 ft 8 in
Wingspan	35 ft 4 in
Wing area	178.5 sq ft
Wing loading	11.2 lb/sq ft
Power loading	9.7 lb/hp
Seats	2 tandem, optional 3rd
Empty weight	1,125 lb
Empty weight, as tested	1,134.5 lb
Maximum gross weight	1,750 lb (2,000 lb option)
Useful load	625 lb
Useful load, as tested	618 lb
Payload w/full fuel	419 lb
Payload w/full fuel, as tested	412 lb
Fuel capacity, std	36 gal (34 gal usable) 216 lb (206 lb usable)
Fuel capacity, w/opt tanks	Up to 68 gal
Baggage capacity	190 lb (option for 200 lb) 36 cu ft

Performance

Takeoff distance, ground roll	150 ft
Landing distance, ground roll	350 ft
Rate of climb, sea level	1,500 fpm

Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption)

@ 65% power, best economy	120 mph/3.3 hr
7,000 ft	(8.5 gph/51 pph)
@ 55% power, best economy	110 mph/4.2 hr
7,000 ft	(7 gph/42 pph)

Limiting and Recommended Airspeeds

V _X (best angle of climb)	45 MPH
V _Y (best rate of climb)	75 MPH
V _A (design maneuvering)	96 MPH
V _{FE} (max flap extended)	85 MPH
V _{NO} (max structural cruising)	122 MPH
V _{NE} (never exceed)	153 MPH
V _{S1} (stall, clean)	47 MPH
V _{SO} (stall, in landing configuration)	43 MPH

Airspeed numbers reflect those of the original Super Cub type certificate, and do not reflect the slower flying characteristics of the Top Cub. For more information, contact Cub Crafters, Post Office Box 9823, Yakima, Washington 98909; telephone 509/248-9491; fax 509/248-1421; or visit the Web site (www.cubcrafters.com). All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions.

All specifications are based on manufacturer's calculations unless otherwise noted.

final. The second landing came the next day on Wilson's manicured grass runway, where a wheel landing resulted in a gentle three-bouncer—the oversize tundra tires probably saved that one from being a high-bouncer. However, the speed of 45 to 50 mph on final worked well, without contributing to an excessive sink rate.

So much for the technical aspects of the Top Cub. Unless you are hauling fish from a rocky riverbed in Alaska, it's just possible that you don't care. Cub flying for the rest of us is pure, simple flying, done for the same reason that you order an ice cream sundae. You're not always looking for utility. With the Cub come admirers and a Cub community of like-minded pilots. For example, waiting for us at Wilson's home was Ray Cudd of Moncks Corner, South Carolina, who volunteered his Cub as photo plane for the air-to-air photos with this article. But Wilson also had a Cub and was ready to fly if needed, and there was talk of a third Cub somewhere in the area that could quickly be called in.

Jim Richmond suggests that the next time you see a pilot who owns two or three airplanes, including a Cub, check to see which one is parked closest to the



hangar door—that's the one used most often. It will be the Cub, every time, Richmond said.

In the dimming twilight, Harris and I left Crosswinds for Jedburg—there are plenty of lights on the Top Cub, but none available in Hooterville. The right window was open, with the bottom side panel down. The slide window on the pilot's left was open, allowing the breeze to rollick through the cockpit. The

sun, a red ball low on the horizon, sat perfectly framed by the wing struts. Even at 2,000 feet, the strong scent of the pine trees below filled the air. That's the Cub experience. □

i Other information about the Super Cub can be found on AOPA Online (www.aopa.org/pilot/links.shtml). E-mail the author at alton.marsh@aopa.org