

It All Started



LEEANN ABRAMS

Extensive wing modifications were just the beginning of this Pacer project, turning it into what could be called a Super Pacer.

The Ericksons' highly modified Pacer

BUDD DAVISSON

An aerial photograph of an airport. In the foreground, the nose and landing gear of a red airplane are visible. The middle ground features a large, long hangar with a blue roof, several smaller buildings, and parking lots filled with cars. The background shows runways, taxiways, and green fields under a clear sky.

With a

Rib

Got it! How about Super Pacer? Or “Super P” for short.

Regardless of what you call it, the Ericksons’ airplane is something special...and different. It’s specifically designed to focus the knowledge they’ve accumulated from years of Super Cub work on an airplane that will allow them to live out their airplane dreams. And that’s exactly what they are doing. Shortly after EAA AirVenture Oshkosh 2002 they flew to Alaska to do what they had originally designed the airplane for: have fun in the bush.

Mark (the elder Erickson) is no stranger to working on rag-wing Pipers. For proof, visit www.dakotacubaircraft.com. He and his little company, Dakota Cub Aircraft, have made a business out of turning the Super Cub—already a fair-to-middling bushplane—into something even better with extensive wing modifications. But he didn’t start life expecting to spend so much of it playing with little airplanes.

When Mark graduated from high school in Brandon, South Dakota, he did a hitch in the Army and found himself stationed in Alaska. “I’d been raised in South Dakota, which many consider to have a severe winter climate, so Alaska was no surprise in that regard,” Mark says. “However, I don’t think I was prepared for the entire Alaska experience. It really got to me, and I definitely got the Alaska bug.”

He was barely out of the service when he began working on his pilot’s certificate at Zangger Flying Service in Larchwood, Iowa. “At the time, I was working as a machinist, which is basically what I’ve done my entire life. I did most of my training in an old Taylorcraft BC-12D.”

His life as a machinist took him in a number of different directions, and he eventually found himself working for a government contractor. “We were doing work with satellite imaging and specialized photographic reproduction

All airplanes should have names. Maybe not Fred. Or Alice. But something that would allow us to refer to an airplane—like Mark and Cody Erickson’s wildly modified Pacer—in a more concise manner. After all, even though it started life as a PA-20 Pacer, its Pacer lineage has been pounded so far below the surface that to call it a Pacer is to do it, and the Ericksons, a disservice. It has Super Cub wings (sort of), but it’s not a Cub. It has a Pacer fuselage (kind of), but it’s not a Pacer.



The slotted wing mod on the Ericksons' Pacer really works. "The airplane doesn't like to stall."

equipment, and I gradually established myself as a machinist and tool maker who specialized in prototype equipment. So, I was doing as much designing as machining."

On the aviation side of his life, his ability to build things naturally drew him into homebuilding.

Piper Parts

"My first airplane was a Wag-Aero Cuby I built from plans, and [I] used a few Piper pieces here and there. Right away I was bugged that I couldn't get Piper ribs at a price that was even close to being affordable. Plus, original Cub ribs are terribly fragile because of their construction, which didn't impress me very much.

"Rag-wing Pipers are well known for their rib design. It is a standard truss-type rib, but the legs of the trusses are made of thin aluminum folded into a T section. They are hard to work with and easily damaged. I wanted to build ribs similar to Piper's, but I couldn't see using the original material. So, I designed a T-shaped extrusion of the same



Besides allowing them to load long cargo, the extra large baggage area can also be used for laying out a sleeping bag.

basic dimensions and made my ribs out of that. It was not only much easier to work with, but it was stronger too," Mark says.

"I had the wings coming along nicely when an FSDO (Flight Standards District Office) inspector came to look at the project. He saw

the ribs and said he thought I ought to get an STC (supplemental type certificate) for them and offer them for sale because they are such an improvement over the originals."

Of course, the FAA sees STCs from a different perspective than the applicants do, and among other

things, it doesn't recognize the difficulty of the process. "I worked on getting the approval for two years, finally finishing up in 1993," he says. "By that time, I could see a real demand for the ribs, so I set up a little business producing them. I do very little advertising because I get enough word-of-mouth advertising, which has caused me to expand my product line."

Currently his company produces ribs for nearly all rag-wing Pipers, from J-3 Cubs to Tri Pacers.

Since he was constantly taking Cub-type wings apart, Mark began to see lots of other areas that could not only be improved upon, but that might also grow into products to sell along with his ribs. "By 1997, I had ribs approved for eight different rag-wing Pipers, and then in '98, I got an STC for the full-length leading edge slot like we have on our modified Pacer. It really works and

"I thought we'd build an airplane that would let both of us carry lots of camping gear but not compromise the performance of the airplane."

keeps the boundary layer airflow attached at much slower speeds. Our next STC was for the squared-off wing, which doesn't change the span very much, but it allows the ailerons to go out 23 inches, which allows the flaps to be lengthened by 44 percent over [the] original. The whole wing package drops a Super Cub's stall nearly 10 miles per hour."

He recently received an STC for 24-gallon fuel tanks (the originals are 18), but then he looked around and realized he'd spent so much time developing stuff for other peo-

ple's airplanes that he hadn't had time to do a project for himself. He decided to fix that with the Pacer.

Super P Modifications

"I wanted a family/neighborhood project that we could all work on that would be a useful airplane for us," Mark says. "I have two sons, and one of them, Cody, is really into airplanes, and I thought we'd build an airplane that would let both of us carry lots of camping gear but not compromise the performance of the airplane."

By this time Mark was working

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Cody and Mark Erickson



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with a partner in Alaska, Frank Henrikson, who handles Dakota Cub work there. Frank had a PA-20 Pacer, and he and Mark started talking about what changes should be made to use it as a basis for a home-built bush baby.

“Frank shipped the fuselage

down to me, and I started whittling away on it,” Mark says. “I was going to extend the fuselage for the longer wings, so I cut it off one bay in back of the rear wing fittings. From that point on back, it’s all new tubing.”

Since he was basically building his own fuselage and didn’t have to

worry about obtaining an STC, he could do anything he wanted. This included reshaping the tubing structure right at the back of the cargo area to allow a big open space right at floor level. Besides allowing them to load long cargo, someone can sleep on the floor and have a place

for his or her feet. Mark tried it on their last night in Oshkosh, and reports that it was very comfortable.

The tail surfaces are from a Super Cub, as evidenced by the aerodynamic balance areas. Mark says that because the tail has been moved back from the stock position, the larger PA-18 surfaces are much more effective.

"We modified the lower part of the fuselage to mount what is essentially a PA-18 bungee system, but the gear legs are hand built. The tubing is bigger than stock to handle the loads for the big 26-inch tires. When the aircraft finally reaches Alaska, the legs will be shortened to keep the deck angle under control even when larger 31-inch tundra tires are mounted."

When looking in the airplane, which is obviously a bushplane, the control yokes look vaguely out of place.

"I thought about going to sticks, but it would have meant a complete

redesign of the control system, and I'm not sure I would have gained anything. In all honesty, you don't even notice you're flying with a wheel."

Some folks are a little surprised to find a 150-hp Lycoming ahead of the firewall rather than a 180-hp engine, but Mark has one of the best answers possible when asked why he used the smaller engine.

"I already had it," he grins. "The 180 would make this an even more perfect airplane, and someday I'll probably do it, but right now I don't need it. I do wish I had used a Maule motor mount, however. The Piper mount is too short."

Winging It

Looking at the airplane and its huge wings, it's easy to forget that the Super Pacer started life as a short-wing Piper. The Dakota Cub wings on the Super P benefited from a very extensive research program conducted for a slotted wing certifica-

tion project on a stock Super Cub that included some interesting tuft testing to verify that the mods are working.

"Rather than shooting photos from a chase airplane, which makes it hard to see the tufts, we mounted cameras on both the top and bottom of the wings so we could get bigger images that were really useful. We also used wide-angle lenses so we could see what was happening all the way from the tail up to the throttle position all at the same time. This way we know exactly what the parameters were when the shot was taken."

Mark says the real advantage of the slotted wings is increased safety, and they have proven to be popular. Even so, of the dozen and a half sets of wings he builds a year, he says fully a third of them are for customers who still like the good old stock wing.

"One of the things we found out from our research is that not only do

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According to Mark and Cody, their “Super Pacer” flies almost exactly like a Super Cub...with a little more cruise performance.

our slot mods work, but vortex generators on stock leading edge wings are well worth the investment. Once you use the slotted wings along with all the other stuff we’ve done to this airplane, you can actually make it fly at over 45 degrees angle of attack. I know it sounds crazy, but it’s true. Granted you aren’t likely to be flying around at 45 degrees nose up, but it’s nice to know the airplane doesn’t like to stall.”

“The gross weight of the airplane is 2,300 pounds, and the empty weight is just under 1,200 pounds. The actual useful load when fitted with the big tires is a solid 1,124 pounds, so we can fill the tanks and with only two of us on board still carry more than 450 pounds worth of stuff. In reality, we don’t need all

of that carrying capacity because most camping gear just doesn’t weigh that much. On top of that, the bigger fuel tanks give us six and a half hours of endurance,” he says. “Truth is, it’s hard to sit in an airplane for that long.”

When the airplane was finally flying, they pointed the nose east toward the Piper “Sentimental Journey” fly-in in Lockhaven, Pennsylvania. There they received an almost predictable award. “We were selected as the ‘most modified short wing,’” Mark says.

The obvious question is, “How does it fly?” but the perpetual smile on Mark’s face while talking about the airplane answers that question. “You’ll find it hard to believe, but it’s the absolute truth that the airplane flies almost exactly like a Super Cub, but it’s a wee bit faster in cruise. On top of that, it’ll go almost anywhere you would take a stock Super Cub. It lands at 30 miles per

hour, so there are very few runways that’ll be too short for it. Cody and I are really looking forward to taking the airplane to Alaska and doing some real bush flying.”

The first time you see the Super Pacer the airplane is somewhat intimidating. It stands up high on its huge tires and stares down at everyone beneath it. The wings, which seem perfectly in proportion with the elongated fuselage, are long and reach out over your head.

Curiously, even though the shape of the tail is vintage Piper, the airplane’s lines make it difficult to identify exactly what it is. It wasn’t until we spied the left-side rear door and uniquely Tri-Pacer/Pacer rear window that we knew what we were looking at. But, then, when we were looking at it, Mark and Cody Erickson were still referring to it as a “modified Pacer.” But now we know better. We now know what a Super Pacer looks like.

