



*A berkut was a Russian eagle trained to kill wolves. James Redmon's rendition of it looks every bit the part of a wolf killer.*

PHOTOGRAPHY BY JIM KOEP





## A KIT AIRPLANE WITHOUT THE KIT

**BUDD DAVISSON**

**TO SAY THAT BURT RUTAN'S** Eze series of airplanes have had an impact on homebuilding is an understatement. Within a few years after their introduction in '75, hundreds of VariEzes, followed by Long-EZs, took to the air and the technological seeds Rutan had sown via the Ezes took root in imaginative minds worldwide. New composite, canard designs began showing up almost yearly. Many of them were developed for the rapidly expanding kit airplane market with Dave Ronneberg's version, the Berkut, carrying the concept to the next level.

The Berkut (the Russian word for the wolf-hunting golden eagle) attracted a lot of attention with its ability to accept much larger engines behind the firewall, its two-piece F-4 Phantom-like canopy, and most of all, its fully retractable landing gear.

Structurally, the aircraft took several steps forward from the Eze's carved foam approach. However, as advanced as the aircraft may have been, it couldn't survive in the sometimes fickle homebuilding kit market, and the company disappeared. By that time a bunch of folks had bought kits and were then stranded. Among them was



James Redmon, EAA 423498, of Frisco, Texas. But he wasn't going to let something insignificant, like building an airplane from an orphaned semi-kit, slow him down. The ingenuity, dedication, and attitude he showed in building his Sun 'n Fun Grand Champion Berkut shows him to be a shining example of what homebuilding is all about.

He said that since he was an "Air Force brat," he was more or less born into aviation. After college he planned on working for the airlines, and he became a CFI,

but there was a recession and no one was hiring.

"I thought I'd get a 'real' job to tide me over until some airline wanted me, but soon found myself hooked on a steady paycheck and gave up on the airlines," James said.

"It was about that time that I saw my first canard, a Long-EZ, and instantly I was in love," James said. "Then I saw the Berkut, looked at the performance—200-plus knots out of 180 hp—and said, 'That's the one.' I have a severe need for speed, and the Berkut certainly had that.

Plus, the fact that it was super sexy-looking didn't hurt."

It turns out that James has the same chronic illness that infects most, if not all, homebuilders.

"I absolutely have to be doing something with my hands," he said. "If I don't, I get depressed. When I was a youngster, I built models. Then in high school I built up a 400-hp '70 Mustang that got my juices flowing by street racing."

So, what we have here is an adrenaline junkie who's hooked on speed and knows how to build things that go fast. He and the Berkut were made for one another.

He put the deposit down on his kit on April 1, 1993, and received the first materials a month later. It took a decade to fly because of a number of major setbacks, not the least being that the company had gone out of business.

An early Berkut kit was about 50 percent scratchbuilt because the company wasn't offering all the molded parts yet. There was no construction manual or plans available, and James was told to buy Long-EZ plans to learn techniques and the company would later send photos of how something was supposed to look.

"I was pretty much on my own," he confessed. "When I got into the project, I

*James designed and manufactured the high-temp, carbon fiber pressure recovery spinner to ensure there would be no failure possibility due to heat deterioration.*



*The "son-of-an-EZ" look isn't by accident: Berkut designer Dan Ronneberg based the concept on Rutan's Long-EZ design.*





*It's all in the details: The canard angle and fairings were carefully aligned and flight-tested.*

## Specifications

Typical rate of climb: 2,000 fpm at 120 KIAS

Max straight and level speed in race configuration: Classified (That's fast!)

Economical cruise speed: 200 KTAS  
at 11,500 feet, 6.5 gph LOP

75 percent cruise speed: 215 KTAS  
at 12,500 feet, 9 gph ROP

Range: 1,500-plus nm

Empty weight: 1,150 pounds

Gross weight: 2,100 pounds

Useful load: 950 pounds

Fuel capacity: 56 gallons

Propeller: Catto three-blade utility 64-by-86;  
two-blade race configuration is classified

Engine: Lycoming IO-360-B2B, 180 hp

more or less ignored the fact that I was building an airplane."

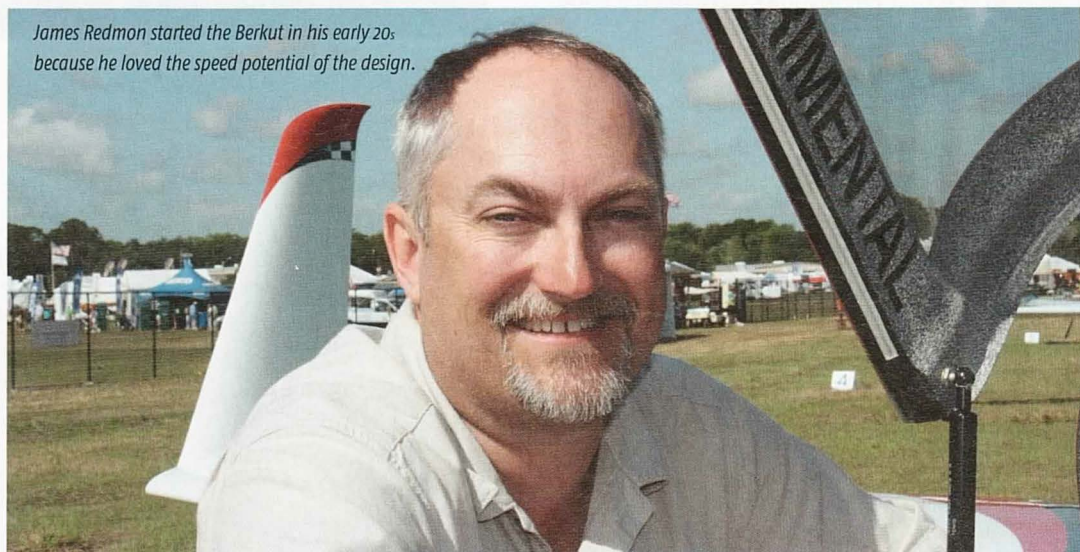
He approached his task as if each small part were the project, and when he finished each part he would "celebrate" by putting photos on a website he created. (For a link to James' website, visit [www.SportAviation.org](http://www.SportAviation.org).) He painstakingly chronicled every operation, down to and including how to safety wire a Lycoming fuel pump in place. The site does a wonderful job at laying out the mechanics of building an airplane, and he touches on them all. Better yet, the website is rife with the enthusiasm borne of passion and is motivational to the extreme.

"I seemed to recognize that by putting my small victories online, I might be motivating other airplane builders," he said. "And that helped motivate me."

He began on the wings, winglets, and canard, which he said were fairly easy, but he started to run into trouble when he began on the molded parts. Fortunately, Dave Ronneberg, EAA 296648, the designer of the Berkut, made himself available by phone, but conversations were difficult since James didn't have photos or drawings and had to visualize everything.

Even though he had built his life around airplanes, he still had to make a living, and at one point his career dictated a move to Dallas. Moves quite often spell the end to an airplane project, but in this case it turned out to be just the opposite: James met two people who would make

*James Redmon started the Berkut in his early 20s because he loved the speed potential of the design.*



his airplane building and life easier than he could have imagined.

Shortly after moving, James met Scott Carter, EAA 62721, a Long-EZ builder and A&P/IA. "He took me under his wing and mentored me on the finer points of composite canard construction and systems installation," James said. "His expertise and support made all the difference and kept me going."

Then, James had one of those life-changing experiences that set him on a new path in many areas.

"A friend had set me up on a blind date," he said. "Now, remember that at that point in my life I'd basically been married to my airplane. I had it all figured out and was doing just fine. My date's name was

Sandy, and right from the get-go it was obvious that we were both fiercely independent, which often means two people can't get along. But, we hit it off right from the beginning."

On their third or fourth date, James decided it was time to test their compatibility by showing her the Berkut project.

"I told her that this was part of the baggage that came with me and Oshkosh was a mandatory event," he said. "She couldn't have been more receptive to the concept." To this day, she still loves flying to events to stand by the airplane and answer technical questions.

"To show you the kind of wife she is, she's the one who picked out the house with the three-bay garage specifically to





make building easier," James said. "And she would constantly say, 'Get your butt out into the shop.' She deserves as much credit for the airplane being finished as I do. Maybe more."

James periodically makes it a point to remind folks that he's just a working guy and sometimes money is tight. Nowhere is this more noticeable than his engine.

He originally purchased a zero-time 180-hp Lycoming O-360-A2A that "wasn't pretty, but was fresh metal, decently priced, and in good mechanical shape," he said. However, after the original company that produced the Berkut went bankrupt and things got iffy on his end, James was forced to sell the engine. But being forced to sell that engine may have been a good thing in the long run.



*This is what is known as total space utilization. A full panel was a necessity but a lot of planning was required to fit it all in.*

*The speed brake is absolutely essential to get the speedster down to landing speed and keep it there.*



## Sport Air Racing League: The Art of Improving Efficiency

By James Redmon

Sandy and I ran the AirVenture Cup Race several times and fell in love not only with the race itself, but the racers, staff, and even the "friendly" competition. And that little bit of competitive drive put me on a path to learn as much as I could about how to make my Berkut faster and more efficient.

A bigger or modified engine was financially out of the question, but I quickly realized that if I made small incremental changes in efficiency, they would compound each other and the benefits would continue to increase the faster I went. My first race speed was 227 mph. My top race speed on a closed course to date is 256 mph, all with the same engine.

The Sport Air Racing League came along shortly after I had run a couple AirVenture Cup races, and I jumped on board immediately. My first year, I accumulated enough points to win 2007 Silver National Champion, and my main competition, Larry Henney in his Lanca 360, took the top spot. That year of racing was great—he'd make a mod and win, and I'd make a mod and beat him the next time.

All of this studying, learning, building, racing, and flight testing uniquely qualified me to be one of the flight-test pilots and systems integration engineers on the Mobius UAV/OPA program for L-3 Communications for the past several years. You just never know where your dreams may take you.

PHOTOGRAPHY BY BUDD DAVIS



Now his Berkut boasts a completely remanufactured 180-hp Lycoming IO-360-B2B with all lightweight accessories, new XP-360 parts, Bendix fuel-injection servo, Millennium cylinders, Light Speed ignition, and no vacuum pump, and it is all surrounded by a black and gold finish. He credits the work to Aero Sport Power, saying the team did a wonderful job.

Now that everything was in place, it was time to get the Berkut in the air. "Finally," he said, "the moment I had been waiting for almost a third of my life was here!"

James brought in Dave Ronneberg, aka Mr. Berkut, to do the initial test flights. It only took Dave a couple of hops and one trip around the pattern to say, "This is a fine aircraft, James. You go fly her."

"I lined up on the numbers and a familiar voice inside my head said, 'James, relax and enjoy this,'" James said. "And with that, the nervousness was washed away, and I was cleared for takeoff."

As James said, this was the moment of transition from project to airplane. "I smoothly added power, and 13 charged

down the runway," James said. "I thought, 'Oh yeah, I'm going to love this!' I popped the canard up at 60 knots, she paused for a second, then just headed for the sky!"

He climbed at 90 knots and 2,000 fpm, then orbited the airport at various speeds to get a feel for the Berkut's handling. After 35 minutes of "pure fun and excitement," he brought it down for what he described as a picture-perfect landing.

"This was an amazing experience that I replayed in my head for hours afterward," James said.

According to James, it was worth every second of the 10-plus years it took to build the Berkut, and he encourages all homebuilders to stick it out and finish their projects.

"To those of you still building, keep doing it!" he said. "Tough it out, find a way, make it happen—the reward at the end is far greater than you can possibly imagine."

So, now James and Sandy have their own magic carpet. However, if you take nothing else away from this homebuilder's

tale, remember James' words, directly from his website.

"Anyone can do this—you just have to want it enough. It's a dream, a curse, a source of great reward and pain—a challenge, for sure! However, it is mostly proof positive that you can achieve the seemingly impossible if you work hard enough. Always remember, shoot for the moon. Even if you miss, you'll be among the stars."

Words to live by. **EAA**

**Budd Davisson** is an aeronautical engineer, has flown more than 300 different types, and has published four books and more than 4,000 articles. He is editor-in-chief of *Flight Journal* magazine and a flight instructor primarily in Pitts/tailwheel aircraft. Visit him on [www.AirBum.com](http://www.AirBum.com).

For more information about James Redmon's Berkut, read the July issue of *The Experimenter*, EAA's digital magazine for homebuilders, available online at [www.EAA.org/Experimenter](http://www.EAA.org/Experimenter).

*The quickly removable baggage pods hold 40 pounds each and reduce the normal 205 KTAS cruise speed by 7-8 knots. His fastest race speed was 256 mph over a closed course. This on only 180 hp!*

