



EXPERIMENTER
FEATURE





THIS SEEMED LIKE A

GOOD IDEA

**LANCE HOOLEY PUT
A JET ENGINE IN HIS
LONG-EZ-INSPIRED
CANARD**

BY HAL BRYAN

SOME OF THE COOLEST THINGS IN AVIATION

STEM FROM SUPERFICIALLY SIMPLE IDEAS.

The Wright brothers wanted to fly like birds, JFK and NASA chose to go to the moon, and Lance Hooley thought it would be pretty cool to stick a jet engine on the back of a Long-EZ.

HE WAS RIGHT.



Lance, EAA 450541, was born to an Air Force pilot who flew in Korea, then went on to do two tours flying B-52s in Vietnam. Lance was inspired by his dad's career, but not necessarily in the traditional way.

"He always had all these stories," Lance said. "He came back with all kinds of holes in the airplane, so he had all these stories about flying. I thought, if I'm ever going to have kids, how am I ever going to be able to tell them stories if I don't fly? ... So at 14 years old I started flying."

Lance dutifully logged his hours in a 1967 Cessna 150 and then, on his 16th birthday, had to ride his bicycle to the airport for his first solo because he wasn't able to drive.

"Two days later, I went to get my driver's license," Lance said. "And the state trooper that gave me the driving test ... was also a pilot out at the airport. He saw me and he goes, 'You just soloed two days ago.' He said, 'Drive me around the block,' so that was my driving test."

After graduating from high school when he was 17, Lance enlisted in the Air Force for four years, doing what he'll only describe as "wild stuff" that there isn't much call for in civilian life. During that time, he built a VariEze while he was based at Fairchild Air Force Base near Spokane, Washington, then sold it when he and his wife divorced. Once his military hitch was up, he used the GI Bill to continue his flight training — earning his commercial, instrument, and multi — and become a CFI.

"This was back in the early '80s when you couldn't get a job. Pilots were a dime a dozen," he said. "I was flying cargo for a really lousy company ... flying Barons, 310s, and Piper [Cheyennes], that kind of stuff."

He did a bit of airline work, spent some time as a crop duster, and then built a Quickie in six months, only to sell it a short time later.

"I progressed to the commuters because I do not have a degree," he said. "I had to have the radial keratotomy surgery on my eyes just to keep my first-class [medical certificate]. ... So the major airlines wouldn't even touch me. They wouldn't even look at me. No degree. Surgery on the eyes. You're done. See you. Bye."

Times, attitudes, and the number of available pilots all changed, and now Lance flies for a major airline, but he remembers the leaner times vividly.

"After the Quickie there was a long, long lull," he said. "I didn't have anything. I missed qualifying for food stamps by a hundred bucks a month, and I was single, flying for a commuter airline. So, there were times when I'd ... have \$10 in my pocket. ... How am I going to eat and how much gas do I have in the car? Is it going to last me two weeks?"

Lance obviously couldn't afford to build another airplane at that point, so he did the next best thing and took a side job working on airplanes for other people.

"It was frustrating to have all this knowledge and ability ... and I can't do anything with it because I don't have the money," he said. "I started working for a guy by the name of Ray Williams in Ashland City, Tennessee, when I was flying for one of the commuters there. I learned to do fabric work. So I could kind of quell the building desire. ... I rebuilt 18 airplanes with him."



The clean lines and straightforward cockpit of Lance Hooley's JetEZ belie the complexity of the systems and structure required to support the compact but powerful jet engine.





Among those 18 airplanes were some Stearmans, a couple of Stinson 108s, some Christen Eagles, and a number of Pitts biplanes, Ray's specialty. Ray taught Lance how to do fabric work, and that, coupled with the bump in pay he got when he made captain at the commuter airline he was flying for, got him building his own airplane once again. This time, he built a DR-107 One Design, an airplane he thinks is underrated.



“IT’S JUST A POWERPLANT. GET OVER IT.”

“The One Design is an incredible aerobatic mount,” Lance said. “You can do anything with it. It’s just so nimble. It’s a blast to fly, and it’s not that expensive. I’m disappointed it’s not that big of a hit. It’s a fun airplane. ... It’s an honest airplane. I just can’t say enough good things about the 107.”

An honest airplane, but not the one he’d been dreaming of for decades.

“I wanted to build another airplane,” he said. “I had wanted a Long-EZ since it came out in 1979.”

Then he came across an article called “Speed Jacket” in the November 2005 issue of *EAA Sport Aviation*. The article was about a jet-powered Cozy and served to introduce Lance to a legendary canard guru named Robert Harris, EAA 91121, who had a business called EZ Jets, now known as Jet Guys.

“Well I’m in Nashville and Robert is in Covington, Tennessee,” Lance said. “That’s a day trip. So I called him: ‘Can I come over and see you?’ Robert’s first impression of me was that I was a pipsqueak.”

Lance got a lot of input from Robert and then set to work. When he was finishing the fuselage about two years later, he called Robert and asked a number of questions that piqued Robert’s interest. Robert came back with some suggestions, primarily about making the cabin a bit roomier.

“Why don’t you make it a man-sized airplane?” Lance recalled Robert asking. “Make it 4 inches wider right down the middle, 6 inches longer where the rear-seater sits, and this and that.”

The good news was that Lance really liked the ideas, but the bad news was that it meant he’d have to start over. And then Robert had another suggestion.

“While I was trying to get all the new materials to do the new fuselage, Robert said, ‘Why don’t you put a jet engine in it?’” Lance said.

From that moment on, Lance’s airplane was built around a jet engine — found on eBay, no less — a General Electric T58-GE-8. General Electric built the first T58 in the mid-’50s under contract to the U.S. Navy, and its first flight was in 1957, when two of them were installed in a Sikorsky HSS-1 Seabat, better known later as the SH-34. The engine was successful to the point of ubiquity and remained in production by GE until 1984. It was also produced under license in the United Kingdom, West Germany, and Italy. The engines were used in helicopters built by Sikorsky, Bell, Kaman, and Boeing Vertol, among others.

By design, the T58 is a turboshaft engine, which means that its power output is used to spin a shaft, usually connected to a transmission, as opposed to just sending thrust straight out the back. Lance’s engine was modified to be a pure turbojet, providing about 840 pounds of thrust, roughly the equivalent of about 800 hp. Not bad at all, considering it weighs 238 pounds.

That engine needs a lot of air to operate, what Lance describes as “an Olympic-sized swimming pool” full of air every minute. The air is fed to the engine through a complex intake system whose design meant that the engine had to be mounted farther aft than was originally anticipated. That meant lengthening the nose, taking an already streamlined airframe, and giving it a sleeker, even slightly sinister look.

That long nose holds the batteries, a 10-pound halon fire extinguisher, and a Blue Mountain power board, though, if he had it to do over again, he would’ve done things differently.

“I’d use circuit breaker switches. It’s so much easier and quicker,” he said. “Yeah they are not as cute and all this good stuff, but as far as working on the airplane, it’s invaluable to be able to pop that circuit breaker and to be able to track stuff down.

“That’s one thing that’s really irking us about this airplane. We’ve made all these ... aerodynamic changes, all these structural changes. We’re ripping out there at 300 knots. ... The airframe is giving us no problems.”

But it’s the off-the-shelf stuff like radios that are bedeviled by some frustrating electrical gremlins they continue to chase after.

The instrument panel is built around two Blue Mountain glass displays, orphaned technology that Lance plans to replace at some point. The radio stack is all Garmin, including a GMA 340 audio panel, SL30 and SL40 transceivers, and a GTX 327 transponder. The airplane naturally sports a fighter-style sidestick, with controls for trim, lights, and the starter. There’s a label that reads “guns,” but it’s probably just a push-to-talk switch. The throttle has three settings — Fuel Cut Off, Ludicrous, and Lightspeed.

SPECS

AIRCRAFT MAKE & MODEL: JetEZ
CERTIFICATION: E-AB

LENGTH: 19 feet
WINGSPAN: 28 feet, 6 inches
CANARD SPAN: 12 feet, 8 inches
HEIGHT: 10 feet, 1 inch

FUEL CAPACITY: 160 gallons
SEATS: 2

POWERPLANT MAKE & MODEL:
Modified General Electric T58-GE-8

THRUST:
840 POUNDS

CRUISE SPEED/FUEL CONSUMPTION:
300 knots/32 gph

In addition to the powerplant, Lance’s JetEZ incorporates a number of other major differences from its Long-EZ inspiration. He followed Robert’s advice and made it roomier for larger pilots, and it stands a foot taller, thanks to the highly modified Long-EZ main gear.

“You have to climb into it,” he said. Taller main gear means a taller nose gear as well, but this posed a problem. Unlike the mains, the nose gear is retractable, and there wasn’t quite enough room in the fuselage for the longer leg, so they added what Lance calls an “F-4 bump” under the airplane’s chin.

Structurally, the JetEZ incorporates carbon fiber wherever possible, as well as custom blended winglets on both the modified GU canard and the updated ERacer wing. The airplane has four underwing pods, two outboard that carry 15 pounds of baggage each, and two inboard that each carry 19 of the approximately 150 gallons of total fuel. With a fuel burn of 32 gph at 17,500 feet and a cruise speed of 300 knots, that gives Lance an easy four-hour endurance and 1,200-mile range. The airplane isn’t pressurized, so to operate at those altitudes he relies on a Kevlar oxygen bottle and an MBU-12 mask that’s right out of an F-16. Hooker harnesses hold pilot and passenger securely to the leather seats under an oversized canopy that was custom blown by Airplane Plastics in Tipp City, Ohio.

“The canopy itself is twice as thick as a Long-EZ, because I’m worried about birds trying to come in with me into the airplane,” Lance said.



An aft-facing GoPro captures video of the world that Lance leaves behind at 300-plus knots.

He made the first flight of N815EY (if you squint, that says “noisy”) in February of 2017, after getting “canard current” in a Long-EZ he and Robert had recently reconditioned. Before takeoff, he uttered what’s often referred to as the astronaut’s prayer, a phrase that is as familiar to pilots as it is unprintable.

“That was my biggest concern, that I would make a mistake,” he said. “I think Robert and the other guys were more nervous than I was. I was just busy. But they had to watch it leave. Then watch it come back. That was hard on them.”

Ryszard Zadow, EAA 258833, of Rutan Aircraft Flying Museum fame, and an ex-F-14 pilot, flew chase, watching for fluid leaks and any other issues.

“It was a good comfort to have him, to be able to look at the airplane on the outside,” Lance said. “He’d tell me if there was a problem out there. If he didn’t say anything, there is nothing to worry about. The radio was quiet ... so we just flew.”

He’d planned on taking it up to 3,000 feet, but, with a steady climb rate of 2,500 fpm, he ended up at 5,000 feet before he knew it. The flight was perfect, and Lance had himself a jet, and the first of a whole new batch of stories to tell.

“So there are two reasons I put that jet engine on there, or three,” Lance said. “One because Robert said, ‘Why not,’ and two, a turbine is way more reliable than a piston. Three, to educate people and get rid of the mystique about jet engines. It’s just a powerplant. Get over it. Oh, it’s a jet. Yeah, it makes noise. So? The other side of it is I want to go fast and [have] more power.”

Robert stepped in with an even simpler answer.

“I haven’t flown much in the last few years, and it’s just kind of lost its luster a little bit,” he said. “This airplane’s bringing it back. That’s why we do jets — because it’s fun.”

It sure looks — and sounds — like it. **EAA**

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