

# *Lil* Flip Flop Flies Again

BY BUDD DAVISSON

**IT'S A LITTLE STARTLING** to realize that the homebuilding movement has existed long enough to have generated its own class of antiques. It's even more amazing to realize that some of the airplanes many of us remember walking past on the flightline at Rockford or early Oshkosh are nearing, or are well past, the half-century mark. The sport aviation community definitely has its own history, and airplanes like the Elmendorf Special, aka *Lil Flip Flop*, are part of that history.



N716L

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# WIK

**KIM KOVACH, EAA 63943**, remembered the Elmendorf Special from his days as a young, second-generation sport-airplane nut, but he forgot about it until recently. That's understandable considering that Kim's passionate (some would say compulsive) involvement in building airplanes has crowded his mental hard drive with a lot of airplanes to remember. He hasn't been without a homebuilt or a restoration project since he was an adolescent.

Raised in Detroit, Kim was 6 when his dad first took him to Rockford for the EAA fly-in. "My memories may be a little fuzzy about that particular fly-in, but even then I knew it was someplace I belonged," he said. "I think it was a genetic thing."

Kim's entire family—especially his father—is serious about building airplanes.

"We always had a project going together in the garage/workshop," he remembers. "I don't mean part of the time; I mean all of the time. Dad was always building or restoring something."

Kim wanted to build something himself, but what he chose for his first project was highly unexpected for a teenager. Always intrigued by historical aircraft, and enamored with the airplanes of the 1930s golden age of racing, he decided to construct a look-alike Howard racer.

Put another way: A teenager who had just learned to fly decided he's going to build a replica of a well-known racing airplane that had no plans and was known to be a handful to fly for even experienced pilots.

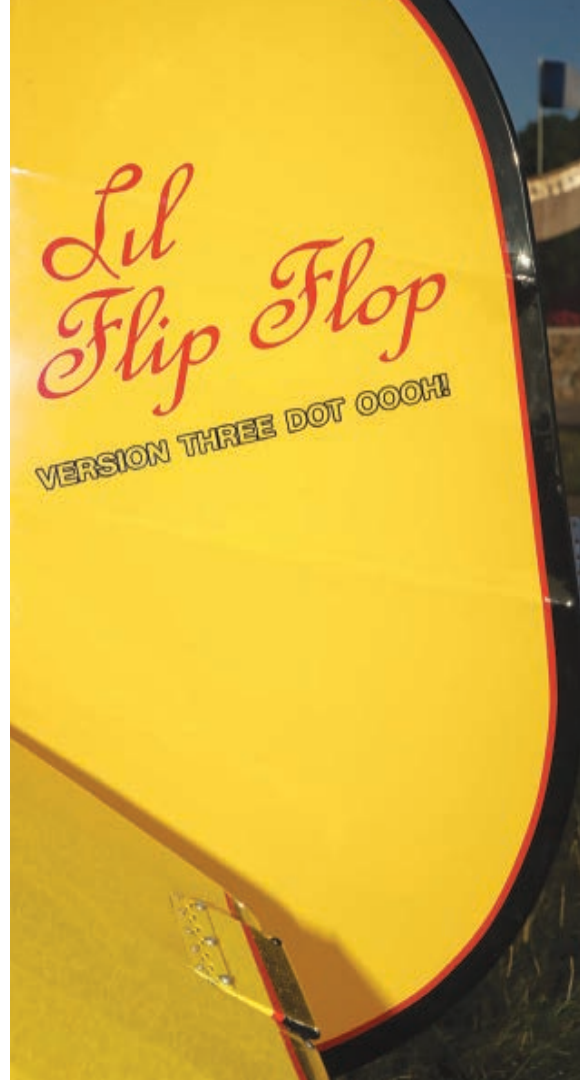
"The original *Ike* was tiny, so I decided to make mine 25 percent larger, which would still be pretty small, but would have enough wing area that it wouldn't be quite so much of a brick," Kim said. "It was a beautiful brick but a brick, nonetheless." That plane is now on display at the Planes of Fame Museum in Chino, California.

Living at home meant not only sharing the house, but also sharing the workshop with his dad.

"Space was tight," he laughed. "I built my wings on the floor on my hands and knees with my wings going crosswise under Dad's wings that were up on sawhorses. In fact, Dad had some extra ribs that wound up in my wings."

Kim worked his way through college as a certificated flight instructor and started flying aerobatics in a Decathlon. It wasn't long before he decided he needed a better airplane and built a highly modified single-place Pitts.

"I zeroed everything out on that airplane," he said. "No dihedral, no nothing. It had ply-covered wings with both of them swept, and it did aerobatics really well, but you couldn't let go of it for a second, and [it] wasn't a lot of fun to fly. Folks can take my



*Kovach calls this Lil Flip Flop version 3.0 because it's the third revision—with three different engines. First, an O-290G, then a Chevy V-8, and now a 210-hp Franklin.*

advice on this: If you want a Pitts, build a Pitts. Don't mess with the design. I screwed up a good airplane."

It took Kim a while to finish the Pitts because he also started an exact replica of the Howard *Ike*, making this one the same size and detailing it like the original. "The original was on display at Oshkosh 1991, sans its covering, so Dad and I spent the week crawling all over it with a camera and tape measure." That airplane won an award and is now on display and still flying at Kermit Weeks' Fantasy of Flight.

All the time that Kim was building his various replicas, which constrained him to an exact visual standard, his historical interest took him in yet another direction, and he began thinking about the many homebuilt aircraft that had originated at his home airport, Canton-Plymouth-Mettetal Airport (1D2), in Plymouth, Michigan. "It has been home for EAA Chapter 113 since about





**Left:** Kim Kovach, EAA 63943, from Ocala, Florida, smiling for the shot in his Elmendorf Special N716L.

**Below:** Elmendorf owner Kim Kovach with his father at EAA AirVenture 2009.



1960,” Kim said. “It has always been an active chapter and influential in my aviation life, so I started looking for an old Chapter 113 airplane to restore, but no one seemed to know where any of them were.”

Most of the airport regulars knew what Kim was looking for, and it wasn’t long before Bob Skingly passed along a lead. While stopping for fuel in Indiana on his way back from Oshkosh he’d heard about a biplane called *Lil Flip Flop* that had been built by Leonard Elmendorf at Mettetal sometime back in the ‘60s. It was for sale, and Kim bought it sight unseen.

“The little airplane was completely disassembled and had been damaged when it fell off a trailer and into a ditch,” Kim said. “The fuselage was badly bent just aft of the cockpit area, and the cabane struts were broken. The tail got pretty beat up, too. It still had the big Chevy V-8 with it that it had the last time I saw it at Oshkosh in ‘72.”

Kim immediately got in contact with the original designer/builder, Leonard Elmendorf, who lives in Summerfield, Florida. “He said that, since the rear fuselage was so damaged, we might as well make the

fuselage longer, while repairing it, to make it come out of a snap roll better.”

About the time that Kim got the airplane home and was working out which way he was going to go with the rather bedraggled-looking little airplane, his brother, Kevin, started hanging around and making noises that he’d like to help.

“Kevin is a builder, too, so he and I decided to partner on the project,” Kim said. “I had already bought an unfinished Howard *Pete* project and really wanted to work on that, but *Lil Flip Flop* was in the shop and taking up space, so I decided to put the pedal to the metal and get that airplane back in the air so I could get going on the *Pete*. So, Kevin and Dad started showing up at my place a lot to get the airplane finished.”

With the fuselage completely stripped, the Kovach crew had to make some decisions as to how to go about repairing *Lil Flip Flop* without losing any more originality than was absolutely necessary.

“We decided to save all the diagonals and verticals and just replaced all four longerons all the way from the seat back to the tail. It involved a lot of surgery and welding, but it

also allowed us to iron out any kinks or misalignments we ran across. As per Leonard’s suggestion, we extended the fuselage 21 inches in the process. At the same time, we repaired the badly bent-up tail and, again at Leonard’s suggestion, added 2 inches to the top of the vertical surfaces.”

The turtledeck was also damaged, and since they were going to have to replace it, Leonard suggested they introduce a curve into it, which was what he said he had in mind all along. “During rebuild the looks came from an ‘aesthetics by committee’ approach with everyone having their say,” Kim said.

“I put Dad on the wings, since that’s one of his specialties,” Kim said. “In fact, he built the wings for the authentic *Ike* replica, so I now call him my wingman. When he got into the wings, it became clear that he was going to have to true them up.” It looked as if two different rulers had been used, and one wing was an inch longer than the rest, so there were some alignment issues. Plus, the left wing looked as if it had been in a fire, so part of the rear spar was replaced.

“This airplane was built when Elmendorf was in his early 20s, with no plans available,” Kim said. “Homebuilding was different in a lot of ways, so the wings weren’t finished to Dad’s standards, which are pretty high. A lot of the smaller pieces and fittings, for instance, had been painted after they were put on the wings, and Dad couldn’t have that. Also, the footprint for an aileron-control bell-crank mount was a little small, so we went to a tripod mount on it. The wings, which used plywood ribs with cap strips, came completely apart, all the varnish was stripped, repairs made, fittings painted, then they were reassembled. The original wings may have been airworthy as they were, but we agreed with Dad and wanted them done right.”

The landing gear was another area that both Kim and Leonard thought needed cleaning up.

“Leonard had the gear coming out of the firewall station, but that required a long extension back to get the wheels in the right place for the CG,” Kim said. “We moved the legs back 9 inches and got rid of the extension with the wheels in the same place.”

Kim makes no apologies about not restoring the airplane to original configuration, partly because it was damaged, but also because Leonard was part of the rebuilding/restoration process and, as such, put his homebuilder thoughts into the airplane. “All along Len said that all we were doing was eliminating the design errors commonly found in any prototype,” Kim said. “Once a homebuilder, always a homebuilder, and like a child never stops being a child in his parents’ eyes, the homebuilder’s creation never truly stops being theirs.” And Kim welcomed Leonard’s input.

“We refer to the airplane as ‘Flip Flop Version 3.0’, since this is actually a third revision, especially in the area of the engine. When Leonard first built, it had an O-290G in it, then he went to the fire-breathing Chevy V-8, which even he says was too much motor for the airplane.” The Kovach crew went for a 210-hp Franklin engine that was actually designed to be used in helicopters. As such, it had no prop flange or thrust bearing. Leonard designed and built a transfer case that bolts to the front of the engine and carries the flight loads and provides a propeller flange.

Leonard Elmendorf built Lil Flip Flop while in his 20s. It was the first of three homebuilts he’s completed...thus far.



“The engine was actually a fresh military overhaul, but we decided to pull it down and go through it, and it’s a good thing we did,” said Kim. “We had Dave James of Helicopter Services in Wayne, Michigan, do the engine, and when he got it apart, he found that the front bearing was in backward and it had a bad crank. He had a case and a crank, so we were in business in short order.”

All of homebuilding exists in an atmosphere that seems to be constantly tinged with a certain amount of humor, largely because of the personalities involved, and this is the case with the rehabilitation of *Lil Flip Flop*.

## 1972

### ► LEONARD ELMENDORF’S SPECIAL BIPLANE



LEONARD ELMENDORF was in the middle of both homebuilding and aerobatics in the late 1960s. Living in Michigan meant he would run across some of the more active practitioners of the art from time to time. He was talking with Steve Wittman at a party about the pros and cons of direct drive versus geared reduction on automotive engines used in aircraft when a manager at General Motors joined the conversation. He came up with a part number for a special Chevy engine designed for Can Am racing. One of the things that piqued Elmendorf’s interest was that it was an all-aluminum V-8 and put out 419 hp on a dyno, which would translate to 370 hp in an airplane.

*Lil Flip Flop* started life with a modified 125-hp Lycoming O-290G, a popular, and inexpensive, home-

built engine that was originally designed to be used in ground power units. Using Chris-Craft boat gears in his nose case on the Chevy, he converted the aircraft into the first Can Am biplane, the Elmendorf Special. The airplane was a sensation at Oshkosh in 1972, if nothing else because the uncowed motor looked gigantic on the little airplane. Plus its ability to pass almost anything in the flyby pattern, while sounding like a Grand National stock car, didn’t go unnoticed. But everything is a tradeoff, and the engine’s weight meant putting the smoke system, the battery, and 8 pounds of lead in the tail.

However, as Leonard put it, “...it sure rattled windows.”



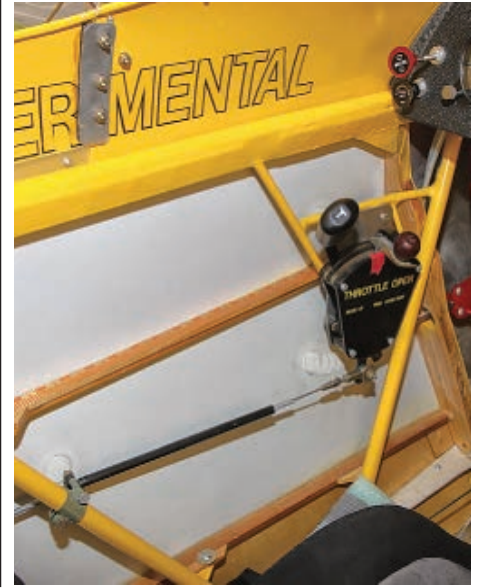
Kim's dad rebuilt the wings, taking them completely apart, revarnishing and reassembling.



Upon Leonard's advice, Kim stretched the fuselage 21 inches.



Lil Flip Flop was re-covered with 2.7 ounce Poly Fiber to keep the airplane light.



“The only standard we apply to what we’re doing with *Flip Flop* is, first, above all, safety, and right behind that fun,” Kim said. “That’s why one of the stringers in the cockpit is overlaid with yardsticks with the battery mount bolted through them, making it look as if we spliced the stringer with yardsticks.”

Kim covered the airplane using 2.7-ounce Poly-Fiber overlaid with SIG light-weight aircraft (Dacron) fabric, which eliminated the need for tapes. The final color is a little brighter yellow than Leonard had on it; it’s Kimball yellow, but the scheme itself is very similar to what it originally had.

“I test flew and de-bugged the airplane in Detroit about a month before Oshkosh 2009,” Kim said. “Then, Len flew it to AirVenture, which was exactly 40 years after he first flew the airplane to Rockford. I flew it back to Detroit after the show.” The airplane won a Bronze Lindy award that week.

“It’s really a fun airplane to fly and does good aerobatics, but my real joy is sharing it with others who, like me, remember it when it was at Rockford/Oshkosh in the ’60s and ’70s,” Kim said. “I can tell you this, when I saw the airplane nearly 40 years ago, it never crossed my mind that someday I’d be

bringing it back to life. That is so much fun, it’s hard to describe.”

The homebuilt movement has generated its own vintage aircraft, but it is doubly cool when two generations of builders overlap on a project the way that Kim’s crew and Leonard Elmendorf did. May the circle be unbroken. *EAA*

**Budd Davisson** is an aeronautical engineer, has flown 300 different types of aircraft, 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).

## ► AIRCRAFT DATA

**AIRCRAFT MAKE & MODEL:** Elmendorf Special  
**CERTIFICATION:** Amateur built

**LENGTH:** 18 feet  
**WINGSPAN:** 20 feet  
**HEIGHT:** 7 feet

**MAXIMUM GROSS WEIGHT:** 1,500 pounds  
**EMPTY WEIGHT:** 1,050 pounds  
**FUEL CAPACITY (gallons):** 23  
**SEATS:** 1

**POWERPLANT MAKE & MODEL:** Franklin six-cylinder helicopter engine  
**HORSEPOWER:** 210 de-rated to 180

**PROPELLER MAKE & TYPE:** Sensenich 76-60  
**CRUISE SPEED/FUEL CONSUMPTION:** 125 mph/11 gph  
**POWER LOADING:** 8.3  
**WING LOADING:** 12.5

**EQUIPPED FOR:** Visual flight rules  
 $V_{NE}$  200 mph  
 $V_{SO}$  65 mph  
 $V_X$  85 mph  
 $V_Y$  95 mph

**PRICE:** \$25,000

**FOR MORE INFORMATION:**  
[kkovach@sealantequipment.com](mailto:kkovach@sealantequipment.com)

