

# Flying to Hawaii

**Dave Lind's champion Long-EZ connects him with history's long-distance flyers**



**Jack Cox**

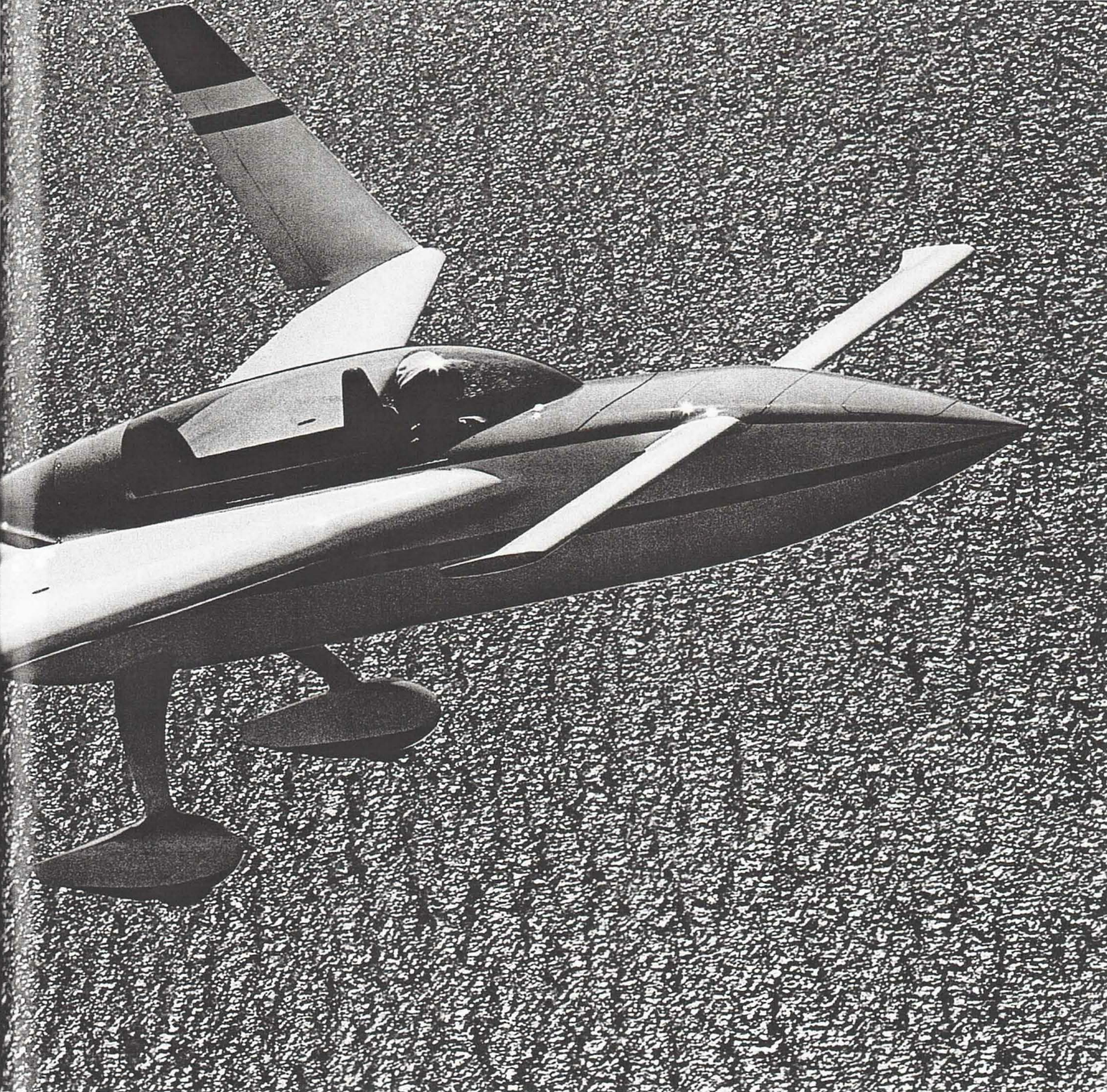
**Y**ou have to be a very long way from anywhere to hit the “nearest airport” button on your GPS and have it display “No NRST!”

When Dave Lind (EAA 276290) of Del Mar, California, had that sobering experience in his Long-EZ, N14DL, he was indeed a long way from anything—except the Pacific Ocean 10,000 feet below him. He was, in fact, at the mid-

point of a long-planned solo flight from Carlsbad, California to Kona, Hawaii and had punched his NRST button just out of curiosity to see what it would display. The unexpected reply was impersonal technology's way of informing him just how far he actually had his soft, pink bod hung out over the abyss—and the little shiver that momentarily raced up and down his spine was not from the cold of altitude!

Dave Lind was born in Willmar, Minnesota in 1937 but moved with his family to San Diego before he was 5 years old. He grew up in nearby Pacific Beach, was educated at La Jolla High School and San Diego State, then enlisted in the Navy in 1961 in hopes of becoming a military pilot. Unfortunately, he could not meet the Navy's uncompromising vision requirements, so





MARK SCHABLE

he opted for bombardier/navigator training instead.

Ultimately assigned to the right seat of a tanker version of the Douglas A-3B Sky Warrior, he flew a full Mediterranean cruise off the USS Forrestal and, later, served on the USS Coral Sea off Vietnam. The aerial refueling role was critical to combat operations in the Gulf of Tonkin, with the A-3Bs "Whales" always aloft to refuel aircraft that were running low and in danger of not

making it back to the carrier.

On one occasion, Dave's A-3B tried to save an A-4 so badly shot up that its pilot could not maneuver to inject his refueling probe into the trailing basket. With no other option, Dave's pilot literally backed his A-3B up to the A-4 and made the refueling connection. As it turned out, the battle damage to the A-4 was so great that the pilot ultimately had to eject, but by that time the refueling from Dave's A-3B had allowed him

to get close enough to the carrier to be quickly rescued.

Although denied Navy pilot training, Dave was still determined to learn to fly. In 1964, while stationed at Naval Air Station Whidbey Island, just north of Seattle, he flipped a coin to decide whether to take skiing or flying lessons, and bought a block of 42 hours of flight instruction after the coin fell in favor of flying. The cost? \$210!

He learned to fly in a Piper J-5,





MARK SCHABILE

then bought a 1940 Luscombe 8C and used it to get his commercial certificate, CFI, and instrument ratings. He sold the Luscombe when a transfer from Whidbey Island was imminent, but he later owned a little Mooney Mite for a year or so while stationed in San Francisco. He really enjoyed the Mite, and its fighter-like agility would stick in his memory and eventually play a big role in determining his next personal airplane.

By a stroke of good fortune, the airlines were hiring when Dave returned to civilian life in 1966 and despite having relatively low time as a pilot, he was signed on by United. He began his airline career as a flight engineer on the DC-6 and progressed through the 720, DC-8, and 727 before easing into the right seat of the 727. Flying as first officer continued through the DC-8 and 747 until Dave made captain on the 737. He flew the Boeing 757 and 767 during most of the past decade, until the FAA's mandatory age 60 retirement rule finally caught up with

him in 1997. He had logged nearly 19,000 hours by that time.

During his career, Dave was able to fly all over the world, but one of the most enjoyable routes was Los Angeles to Hawaii and return. Like most pilots, he had always enjoyed reading about the exploits of the long-distance flyers of aviation's early days, and had always been in awe of the fortitude it obviously took to venture off alone over thousands of miles of open ocean in a single engine airplane. The airline trips to and from Hawaii were routine enough to allow him to think a lot about the pioneers of that route, the Dole racers, Amelia Earhart, and others—and the seed was planted for a similar adventure of his own.

In the early 1980s Dave was given a ride in a VariEze by a fellow United pilot and he instantly fell in love with the airplane type. Its Star Wars configuration, the fighter-like agility he had been impressed with earlier in his Mooney Mite and, significantly, the aircraft's very long range capability, as evidenced by the world

records Dick Rutan and Jeana Yeager had been setting in the prototype Long-EZ and, later, Dick's EZ, N69SH, and, especially, Rodie Rodewald's flight from Hawaii to Oshkosh in 1982 combined to place the airplane in the "must have" category for Dave.

Although initially concerned with his ability to construct an airworthy aircraft ("I'd never built anything in my life at that point, other than a chicken house."), he bought the plans for the Long-EZ in 1984 and began what would turn out to be a nine year period of construction. In retrospect, Dave says that several years were added to the building time by his summer ritual of attending fly-ins to carefully inspect all the EZs, pick the brains of their builders, and incorporate the best of the new ideas and innovations he encountered. Mike Melvill at Rutan Aircraft Factory (RAF) was a great help throughout the project, he recalls.

From his discussions with other builders, Dave decided early in the project to install a Lycoming O-320



in his Long-EZ. He deliberated for some time over whether to go with the 150 hp version so auto fuel could be used, or with the 160 hp 100-octane version. Ultimately, he decided in favor of the 160-hp model, an O-320D3G, and bought a new engine. That decision was influenced to a great degree by his wife, Mary, who cast a decidedly jaundiced eye at the idea of her husband flying around with a "second hand" engine.

Burt Rutan designed the Long-EZ around the Lycoming O-235, so Dave's choice of the heavier O-320 was the first domino to topple over in the chain of modifications that additional weight would dictate, beginning at the nose of the aircraft. Partly for looks and of necessity for weight and balance, Dave lengthened his EZ's nose by nearly a foot, making room for the battery and the little converted hair dryer that is popular among canard aircraft builders for use as a foot warmer. He also managed to squeeze in a small Halon fire extinguisher.

Back in the cockpit, Dave canted his instrument panel about 70 degrees to provide more room for the top row of instrumentation and still clear the canard behind it. Constructed of aluminum, it bolts securely to the airframe and retains the structural rigidity of the panel called out in the RAF building instructions. Dave knew at the beginning of his project that he would ultimately fly the EZ to Hawaii. Because that required an IFR flight plan, he installed a TSOed King radio, transponder, and GPS. He also installed a Navaid AP-1 single-axis autopilot capable of tracking either a GPS or VOR course, which he subsequently came to consider a life saver on 16 hour long legs over open ocean.

Dave says that he is forever being asked if his fuselage is wider than normal. It isn't, but it does appear to be—an effect resulting from his decision to install his circuit breakers on his instrument panel rather than on the arm rests, as many EZ



MARK GODFREY

**Dave Lind and his EAA AirVenture '99 Champion Long-EZ, N14DL. A recently retired United captain, Dave and Mary, his wife of 37 years, have four children. One is a nurse and the other three are airline pilots.**



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builders do. He had the space to do this largely by virtue of using tiny digital instruments to display engine function readouts. His airspeed indicator is, in fact, the only "steam gage" on his very professional appearing panel.

Elsewhere in the cockpit, Dave installed one of fellow San Diego-area Long-EZ builder Lee Carlstrom's canopy lock mechanism that incorporates a lever that extends down and blocks the throttle when the canopy is open. Dave also modified the little clear plastic window on the nose gear well that is used to visually check whether the gear is up or down. He hinged his so it can be opened to provide additional front-seat ventilation. A separate NACA duct provides fresh air for the rear seat.

The rear seat area also contains a removable thigh support. Unscrewing two bolts allows it to be popped out to make room for baggage—or for the 40 gallon aux tank used on the flight to and from Hawaii. Dave did eventually learn to ski, and he used the shape of the grip on a favorite ski pole as the model for carving his EZ's walnut stick grips.

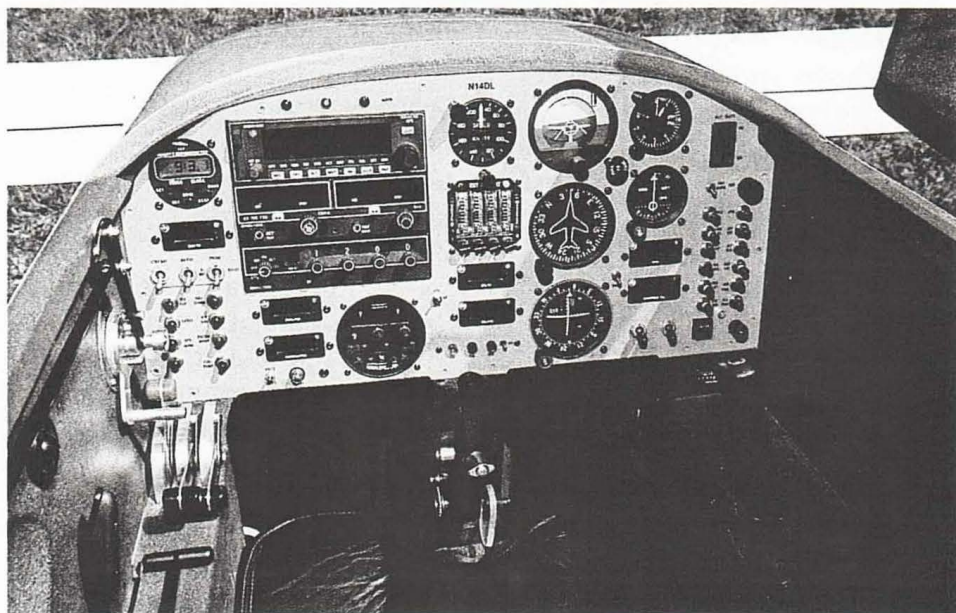
In the Long-EZ's strakes, the in-board portions that are used for storage, Dave installed an EPIRB for the flight to Hawaii. "That stands for Emergency Position Indicating Radio Beacon. It's designed for boating and it begins transmitting when it gets wet. In an airplane, it can be activated manually. It's like an ELT, but it also transmits a user identifying code, so that rescuers will know the type of airplane, the identity of the pilot and can call his home to verify the information. It's a neat little unit. I bought it for the Hawaii trip, but I'm going to keep it in the airplane," Dave says.

A couple of additional items installed specifically for the Hawaii flight included a relief tube that runs down the left main gear leg inside the streamline fairing and a length of conduit that was built into a wing to allow a trailing wire antenna for an HF radio to be paid out from the bot-

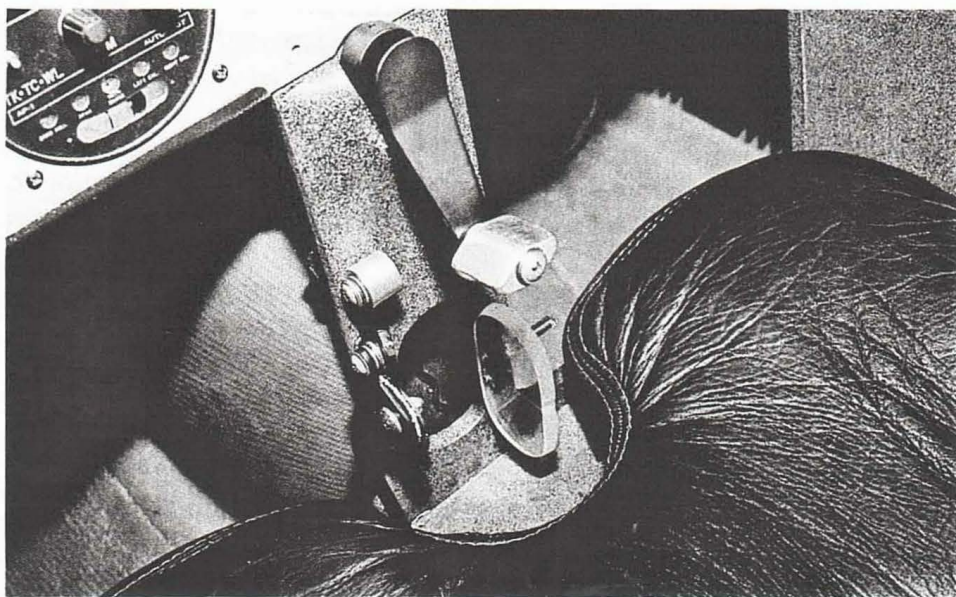




The extended nose of N14DL provided room for the aircraft's battery, a heater and fire extinguisher.



N14DL's very professional instrument panel contains just one "steam gage," the airspeed indicator.



Dave Lind's Satellite 406 Emergency Position Indicating Radio Beacon (EPIRB), which he bought for use on his flight to and from Hawaii in July of 1996. It carries a code that identifies the airplane and pilot/owner.

tom of a winglet. The HF radio, itself, had to be mounted under Dave's left knee to be accessible for tuning.

Back outside, a John Roncz canard, designed to eliminate the loss of lift in rain, was used. Dave also chose to use a flush NACA inlet to supply cooling air for his engine, rather than the stock external belly scoop. Knowing that the NACA inlet has to have a very precisely sized and shaped inlet and run-in ramp to be effective, Dave first built a rather elaborate wood tool in which to lay up his ramp. All the extra effort paid off because the engine and oil have cooled just as he hoped they would.

Drag reduction was a major goal throughout the project and Dave knew that the airflow around and through the cowl would be the most critical part of that effort. In addition to the NACA inlet, he wanted a really tight, low drag cowl, but that meant he had to have

N14DL's nosewheel inspection window hinges open to provide fresh air for the pilot.



the exhaust system tucked in very closely around the engine. He began by buying a bunch of off-the-shelf



exhaust segments—elbows, 180-degree bends, etc.—and with the judicious use of a hacksaw, cut and fitted them to the desired angles, tacked them together by various means and had a professional do the finish welding.

As often is the case, the first version was found to be prone to cracking, so he built another one incorporating slip joints and retaining springs at each exhaust port. Keeping the airplane as light as possible was a simultaneous effort, and the cowlings was a primary target. Dave built up molds for the top and bottom cowl segments in the shapes he wanted, then laid up just two plies of fiberglass in each. Attaching these very flexible pieces to the airframe, he pushed, pulled and twisted each of them until they were in the desired shape, then built rigid frameworks around them to temporarily hold them in place. Pulling them off the airplane, he turned the cowl segments upside down and epoxied in a layer of Kevlar to provide the necessary degree of rigidity, without adding a lot of weight.

With the airframe completed, the final systems and components were installed, including 5:00 x 5 Cleveland wheels and brakes, a Catto two-blade propeller, and a spinner kit from Aircraft Spruce. When finally completed, but still in primer, the EZ, now registered as N14DL, had an empty weight of 918 pounds. With a starter, battery and IFR panel, this was a number Dave was justifiably proud to see come up on the scales.

He flew the airplane for the first time on August 5, 1993—out of

Brown Field in San Diego. Not wanting to glaze his new cylinders, he taxied just enough to find that the brakes were working properly for steering, then blasted off and flew for an hour and 20 minutes at the high power settings Lycoming recommends for breaking in a new or overhauled engine. All went well, with just a few minor squawks encountered, and after they were worked out, it was time to take the bird home again for paint.

Dave built his Long-EZ in his family's two car garage, and he also painted it there. Never having spray painted before, he read all he could on the subject, bought and borrowed the best equipment he could find, practiced until he thought he had grasped the basics of the art, then, still with a great deal of trepidation, began painting his left wing. Knowing he could not make his temporary paint booth totally dust free and realistically expecting to have to sand off a lot of his early learning curve errors and start over, he chose to use the single-stage PPG Concept paint. It was supposed to be readily sandable—and it was. Dave ultimately ended up with a beautiful finish that certainly belies the fact that it was his first effort at fiberglass finishing and painting. Of course, much of his success was the result of all the time and effort he put into sanding and filling, sanding and filling...and still more sanding and filling, in preparation for painting.

Initially, N14DL did not have wheel pants, but once Dave began racing in Shirl Dickey's series of closed-course events, a pair of Klaus Savier's slick pressure recovery pants was purchased and installed, along with fairings for the main gear legs. Another Catto two-blade prop was given a try, but it was ultimately replaced with a Catto 60x82 three-blade that Dave liked much better. In addition to his own, Dave tried eight or 10 other propellers on his EZ, and the Catto three-blade turned out to be the fastest and

smoothest of them all. It also produced the most initial acceleration.

The Catto props, which are wood with a composite covering, have been quite durable, Dave says, and he has been very happy with them. They are heavy, he concedes, but their performance and especially the smoothness of the three-blade more than make up for it, in his opinion. The three-blade prop required a new Aircraft Spruce spinner, and this time Dave was careful to give the cutouts for the blades a generous radius to avoid the cracks he encountered with his two-blade spinner. He had tried to make the cutouts fit the prop contours too closely, including some rather sharp corners, and produced some points of high stress that quickly induced cracks. Although many assume his present spinner is chromed, it is actually polished - the result of a lot of good ol' elbow grease.

With the addition of the wheel pants, gear leg fairings, three-blade prop, etc., the airplane's empty weight increased to 957 pounds—but that was more than offset in Dave's priorities by the performance increase that resulted. When he began competing in races without wheel pants, he did not do well against competitors who had been tweaking their EZs for years. After all his modifications, however, his top speed increased to 200 knots (230.31 mph) and in his most recent events, including the 1999 Copperstate Dash, he has always finished first or second in his class. He plans to continue cleaning up the airframe until the very last knot is squeezed out of it.

His racing has been challenging and a lot of fun, but Dave's great adventure in 14DL was his flight to Hawaii and return in July of 1996. To prepare for the trip, the first order of business was to increase the airplane's fuel capacity. The normal strake tanks held 56 gallons, but some pretty comprehensive flight planning told him he needed nearly 100 gallons to have the reserve he

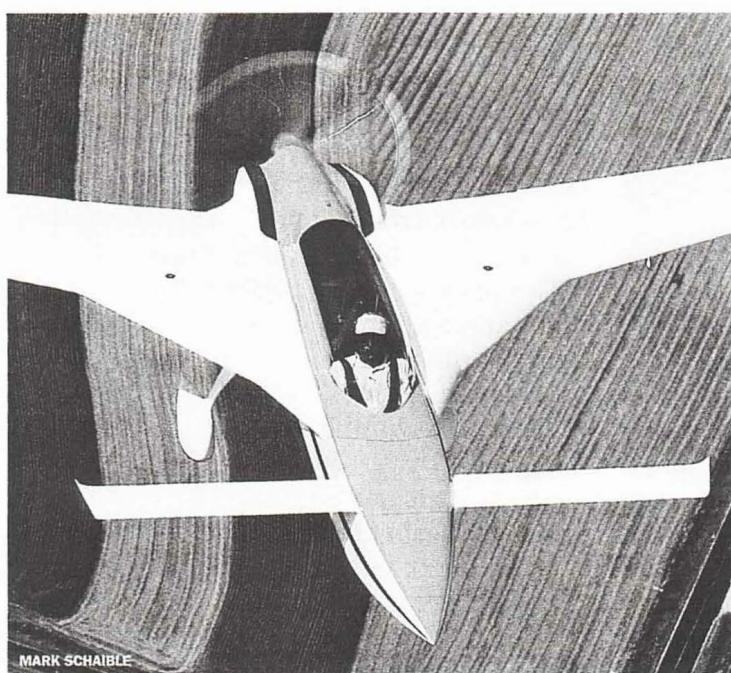


AZE  
wanted. This was not going to be a publicized, record-seeking flight with a razor thin margin for error. It was, rather, simply a personal challenge, something he felt would result in a great sense of accomplishment, so he wanted much more than enough fuel to complete both the anticipated tailwind-assisted flight to Hawaii and the longer duration return home to California.

Dave made up his aux tank by using pour-in-place foam to make a plug that fitted into every nook and cranny of the rear seat area. The result was a composite tank with a capacity of 40 gallons. That gave him a total of 96 gallons, which was well within the cruise performance envelope he had established for the flight. Interestingly, Rodie Rodewald had lugged an amazing 140 gallons aloft for his Hawaii to Oshkosh flight in 1982, but Dave's ultra-clean, 160-hp Long-EZ was so much faster than Rodie's 115-hp O-235 powered EZ that he simply did not need that much fuel.

With GPS, accurate navigation was a given, but Dave did borrow a friend's handheld unit as a back-up. Otherwise, most of his remaining preparation centered around getting his high-frequency (HF) radio to work. Composite airframes are always problematic platforms for HF radios unless a lot of effort is expended to provide a ground plane of some sort, and Dave was not completely successful in this regard. He managed to get the radio to work well on the frequency commonly used during the day, but never on other frequencies. Since his legs to and from Hawaii were largely in daylight, this was never a major concern.

When Dave departed from Carlsbad, California, his EZ weighed close to 1,800 pounds. He got off in 2,500 feet and had no problem climbing to his cruising altitude of 10,000



feet. As forecast, the July weather was good, and about a third of the way into the flight, he began picking up the easterly trade winds, which eventually increased his groundspeed by as much as 25 knots. For much of the flight, all went exceedingly well, but, finally, the human element did come into play and caused some anxious moments. Dave had installed an electric fuel pump with its own separate on/off switch to transfer fuel from the rear-seat aux tank to the left strake tank—a little at a time—until it was empty.

"Well into the flight, when I had about 15 gallons remaining in the aux tank, I got tired and distracted by something and forgot to turn off the pump when I should have. The pump made a different noise when the aux tank went dry, and when I heard that, I knew that, uh oh, I had overfilled the left main and had pumped probably eight or more gallons overboard! My immediate thought was, 'Am I going to make it?' Then I began thinking how embarrassing it would be if I didn't. Fortunately, however, the trade winds kept speeding me up and I eventually landed with nearly 17 gallons left. I should have had 25," he says.

"Just to be sure about my fuel situation, I landed at Hilo, on the eastern side of the Big Island, rather than Kona, on the west side, which

had been my destination. I spent a couple of days at Hilo, flew around the active volcano on the island, saw where the lava flows right down into the ocean, flew over to Maui, and then back to Kona to meet my wife. She had brought some foil tape with her and we ran a strip of it down the right wing in hopes it would improve the HF radio operation, but it didn't. At least we tried.

"I departed from Kona for the flight back to Carlsbad. I took off at sunrise and just never could get out of the trade winds. I finally landed 16 hours later at Carlsbad, at 12:30 p.m., with 10 gallons of fuel left. The plan had been for Mary to leave shortly after me on United to Los Angeles, then take the shuttle down to meet me when I arrived. As it turned out, she missed her connection and I beat her home by about three hours!"

With a full measure of justification, Dave is proud of his Long-EZ. In building it, he proved to himself that he was capable of turning out not only an airworthy aircraft, but one with such a high level of craftsmanship that it was awarded a Champion trophy at EAA AirVenture '99—which means it was in very close contention for Grand Champion in the largest, toughest field of competitors the sport aviation world has to offer. Since its completion in 1993, it has provided Dave with a highly stimulating dual challenge: serving as a racer in which to stoke his competitive fire, and as a test bed for his creative efforts to go ever faster (and thus more efficiently). N14 Delta Lima has also become a direct connection between Dave and his long distance, over-ocean heroes from the pioneer days of aviation.

Foam, fiberglass and epoxy are, in retrospect, just a small part of all his Long-EZ has become to Dave Lind. ♦