SKY JOCKS of the SIERRA : Riding the Mountain Wave, Glider Pilots Push the Limits of Powerless Flight in the Treacherous Blue Yonder

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EIGHT MILES UP, THE BEAUTY AND RISK ARE SEDUCTIVE. TOWERing clouds frame the Owens Valley, and Mt. Whitney looks like a speck in the haze. All is quiet except for the occasional radio transmission and rush of air along the carbon-fiber wings. Airspeed, altitude, rate of climb and position must be checked constantly and adjusted. The mental focus is so sharp, there is nothing except flying.

Up here, above 40,000 feet, the wild blue yonder is just that in a sailplane--wild. Unconsciousness occurs within 15 seconds if the oxygen systems fail. The air pressure is so low that potentially lethal nitrogen gas expands in the blood and tissue.

deep-freeze. Warmth comes from long underwear, woolen pants, a parka and electric socks. But none of that will prevent the glider's wings from turning brittle in the subzero air, or keep heavy frost from covering the canopy.

Considering all the instruments, insulation and oxygen equipment crammed into the slender cockpit, a coffin would be more roomy. Hours pass in the tight confines as the pilot maneuvers the engineless aircraft skyward. Yet, discomfort pales compared to the intense rush of being carried aloft by the powerful winds that slam into California's Sierra Nevada--the top of the pyramid for local sailplane jocks.

The stimulating journey up the ziggurat starts at a gritty airstrip off Highway 14 in the high desert, a few miles northeast of Mojave. Beyond the "Taco Tec" sign boasting of the "Biggest Burrito on Earth," an old sailplane trailer, gleaming white amid sage and Joshua trees, points the way. The turnoff leads to the airport at California City, a stretch of sun-beaten asphalt surrounded by corrugated-steel hangars. To the earthbound who drive between Southern California and the Sierra, this weathered airfield is a place to pay $50 for a quick thrill in a sailplane over the dun-colored landscape. But this is also the runway to rarefied air.

California City is similar to other bare-bones glider ports except for one thing. For more than a decade it has been the roost of a small brotherhood of aviation purists

United States have so many top record-holders and skilled sailplane pilots concentrated in one spot.

“The wave conditions at California City Airport are some of the best in the world,” says Gene Hammond, president of the Soaring Society of America, which has about 14,000 members. “Those guys are really trying to take it to the limit, that’s for sure.”

Although many people fly sailplanes for recreation, only a handful of pilots usually have the time, dedication and official safety and control clearances from the U.S. Air Force or federal aviation authorities to pursue major records from the Sierra.

There are the high fliers like Robert Harris, 60, a Riverside hardware-store owner who holds the world sailplane altitude record. At 48, in the midst of a divorce and a midlife crisis, he paid $25 and took his first sailplane ride. Eight years later, the high-strung Harris soared solo to 49,009 feet, almost 15,000 feet above the cruising altitude for most commercial airliners.

Harris’ affable sidekick is Jim Myer, also of Riverside, a former Air Force captain and decorated Vietnam War veteran. Drilling holes through the sky in a Cessna just isn’t satisfying, he says, compared with the skills demanded to stay aloft in a sailplane. For the past five years, Myer, 49, now a plastics manufacturer, has teamed up with Harris

Close relatives to the altitude men are the cross-country pilots, such as Mike Koerner, 37, of Harbor City, a mechanical engineer who set the U.S. distance record of 903 miles, and Henry Combs, 75, of Canyon Country, a member of the Soaring Society's Hall of Fame. He and Koerner have their sights on the world distance record of 907 miles, which was set by Hans Werner Grosse in Germany in 1972.

Accomplished at both altitude and cross-country flying is Harold Katinszky, 35, of Redondo Beach, a pilot for Premier Air Charter Service in Santa Monica, who has held 17 state and national records for speed, distance and altitude since 1980.

In an age of computerized cockpits, sophisticated planes and heavily regulated airspace, these individuals form a bastion of stick-and-rudder types who would rather fly by the seat of their pants. For years, they have flown for little more than personal enjoyment and a few lines of agate type in the Soaring Society handbook. Every once in a while a record falls, and they throw a party.

Though some fly for records and some for the thrill, all agree that they find nothing more addictive or absorbing than climbing into a sleek piece of fiberglass and tapping into the natural elevator ride that the Sierra provides. "Some people like engines, the sound and the power of them. But engine power pales in comparison to wave power," Katinszky says. "It's like finding a pearl in your oysters Rockefeller. You feel like you

THE WAVE SEASON RUNS FROM NOVEMBER THROUGH MAY, when storm fronts from the Pacific Ocean collide regularly with the Sierra. As strong winds spill over the range, complex turbulence produces tremendous updrafts, usually signaled by tall, lens-shaped lenticular clouds. Mountain waves can reach more than seven times the height of the mountain range, well into the upper atmosphere.

Joachim Kuettner, now a consultant for the National Center for Atmospheric Research in Colorado, first studied the updraft phenomenon in the Sierra during the 1950s. He and others found that waves can occur at jet streams of up to 180 m.p.h., and rates of climb for a sailplane can exceed 3,000 feet per minute. Kuettner, who has a doctorate in physics, also showed that the phenomenon can resonate downwind, setting up a series of waves that can be exploited by cross-country pilots.

Flying the wave updraft is usually smooth going, but beneath the wave lies trouble--a rotating mass of wind, literally a horizontal tornado, that can destroy a sailplane or force an unwary pilot into the mountainside. It is called, aptly, the rotor. Sailplanes from California City have to be towed eastward through this section of rough air to reach the wave on the other side.

Larry Edgar, a retired flight-test engineer now living in Northridge, knows how powerful it can get. In 1955, while working with Kuettner's research team, he escaped

along the rotor's edge that seemed to explode in front of him at the last moment. He looked at the needle and ball, an instrument that indicates whether the plane is flying level.

"Instantaneously the needle went off center," Edgar wrote in his flight log. "I followed with a correction, but it swung violently the other way. The shearing action was terrific. I was forced sideways in my seat, first to the left, then to the right . . . a fantastic positive (gravity) load shoved me down into the seat. This positive load continued. Just as I was blacking out, it felt like a violent roll to the left with a loud explosion . . . ."

Within seconds, Edgar's sailplane disintegrated, and he plunged through the clouds in what was left of the nose, his feet stuck in the rudder pedals. Everything else--wings, tail and fuselage--was gone. The force of the wind was so enormous, an estimated 16 Gs, that he was temporarily blinded. Then, miraculously, he was pulled from the plummeting wreckage--and out of his boots--when he opened his parachute.

Now 75, the veteran pilot lectures yearly on his brush with death at the Sierra Wave Camp at California City, a kind of Boy Scout jamboree for sailplane enthusiasts. Edgar laments that he is probably better known for his disastrous flight than the fact that he still holds the world altitude record for two-seat sailplanes. In 1952, he and

ONE PRODUCT OF THE PIONEERING EFFORTS OF KUETTNER AND Edgar is a pilot like Mike Koerner, an intense man who has been soaring since he was 16 and even proposed to his wife in a sailplane. At his Harbor City home one evening, Koerner spread a large, detailed map of the United States across the kitchen table. Radiating from California City Airport are dozens of black lines. They lead to places like McDermitt, Oregon; Ely, Nevada; Price, Utah, and Las Cruces, New Mexico. But two lines stand out from the others.

One goes to Reno. In 1978, Koerner flew there and back in a Kestral, a single-seat open-class sailplane. The flight set a state record for out-and-return flights and made Koerner the 22nd person in the world to fly a sailplane more than 1,000 kilometers (621 miles). The other line goes into the Texas Panhandle, 903 miles from California City. Koerner flew that far on April 19, 1984, to set the national distance record. He was four miles short of the world mark set by Grosse, the German, in 1972.

To Koerner, nothing beats reclining in the tiny cockpit of his Ventus. The craft envelops him like a cocoon, and the enormous canopy affords him a panoramic view. Climbing, diving and turning a sailplane in smooth air, he says, is like being in a swing over the earth.

“You’re completely separated from worldly concerns,” Koerner says. “It’s so totally

The day of his record flight, the weather did not look promising, but Koerner decided to fly anyway. He landed almost 12 hours later as night fell on the Gaines County Airport in Seminole, Tex.

Koerner first climbed in mountain wave to 32,000 feet and headed east. The wind was stronger than expected, and he flew to Needles, traveling along the edge of a long cloud bank to the north. When he encountered lift over several isolated desert peaks, he slowed down his plane and spiraled upward until the updraft was exhausted.

Over Arizona, and despite a cloud layer that blocked his vision of the ground, Koerner worked his way south to reach clear sky. By the time he arrived over Glendale, Ariz., he had descended to 12,000 feet, the lowest altitude of the trip. He thought he'd have to land at the Mesa or Phoenix airport but found some lift again south of Phoenix and managed to get to 18,000 feet. Then he spotted Mt. Lemmon, about 125 miles away. Behind the peak was a stark white cloud--an indication of wave. "It stood out," he said, "like an oasis in the desert."

Koerner angled his plane across the southwesterly gusts, using a continuous set of upwind turns followed by downwind turns--in effect zigzagging; he likened it to crab-walking across the sky. Finally, in the lee of Mt. Lemmon, Koerner found an

24,000 feet. Over Artesia, he found something he had never encountered in his soaring career--narrow cores of lift. He moved from core to core, getting everything he could out of them.

After 11 3/4 hours of flying, finally over Texas, Koerner landed at Seminole. From there he took a bus to Odessa and walked 12 miles to Midland International Airport to catch a commercial flight home, leaving his glider to be retrieved later. Grosse's record might have fallen that day but Koerner, who had the altitude to go farther, ran out of daylight and called it quits.

Yet he saw the potential for flights of more than 1,000 miles. "The atmosphere is extremely dynamic. We have no perception of its potential," Koerner says. "There is the ability for such long flights. We can and will go farther, much farther than we have. The records really are of little consequence."

KOERNER PARTLY CREDITS HIS NATIONAL MARK TO THE ADVICE of plain-spoken Henry Combs, who has espoused the idea that the best cross-country flights are made possible by gaining altitude in mountain wave and then turning downwind toward Arizona. Combs, a retired Lockheed engineer, took his first sailplane ride in 1963. "I've been trying to get it out of my system ever since," he says.

beige flannel shirt, a straw cowboy hat and a silver belt buckle with a road runner on it. The aviator glasses don't fit the Western get-up, nor do the detailed computer printouts of weather conditions he's carrying.

He is full of one-liners: "An experienced glider pilot is one who is still alive," and "Power planes only have two purposes in life--to go somewhere and to tow a sailplane."

At the airfield, Combs can usually be seen with several sailplane pilots in tow. They hang on every word he says. The Wave Guru, some call him. The Dean of Soaring, others say. The compliments cause some turbulence in Combs' even manner. "Why are you interested in me?" he asks. "I haven't done anything that great." His friends call that kind of talk The Humble Henry.

Combs flies a 1967 Libelle 8301, one of the world's first all-fiberglass designs. The cockpit is filled with little innovations, such as a small solar panel that he installed to help power the electrical system. He is so attached to the ship that he says "we" when referring to himself and the aircraft.

The German-made sailplane is typical of modern designs. Such aircraft weigh between 750 and 1,500 pounds and have wingspans ranging from 50 to 85 feet. Their

between $10,000 used and $100,000 new. Although U.S.-made models are available, most now are built in Europe.

Combs perhaps has made more long-distance outings than any other sailplane pilot in the United States. Though he has yet to set a national or world record, he has flown at least 142 flights of more than 315 miles, a considerable achievement in soaring annals.

To Combs, cross-country flying is the ultimate adventure, as varied as the sky is complex. He never knows whether he will end up under a Joshua tree a few miles from California City or in Liberal, Kan., his ultimate goal, 1,000 miles away. No matter how far he goes, the flights demand constant attention to navigation, the weather, the aircraft's performance and the skill to ring the most out of the atmosphere.

"A sailplane cockpit is a busy place. You can lose 150 feet of altitude a minute," Combs says. "In six minutes, 900 feet. It's a crazy kind of thing. Sailplanes can easily get into trouble. You don't take chances unless you have to."

On average, about six sailplane pilots are killed every year. According to the Soaring Society of America, the soaring safety record is on a par with other types of aviation.

daredevil, nor do I consider distance soaring a daredevil activity. The safety issues can be dealt with."

But there are risks. Over the years, pilots have lapsed into unconsciousness because of oxygen-system failures. Wings have broken off in severe rotor. Strong turbulence has forced low-flying sailplanes into mountainsides, so-called "granite clouds." Go too slow, the plane falls out of control. Misjudge a 45-mile-an-hour crosswind during landing, the aircraft hits a hangar, gas pumps or other sailplanes on the apron.

At higher altitudes, there are more concerns. Frost fills the cockpit. Instruments can freeze, and frostbite is a risk. Ailerons and dive brakes can jam as they ice up or warp out of shape. Because the cold makes wings and fuselages brittle, the pilot must maneuver carefully to avoid overstressing the aircraft and fracturing the finishing coat.

Speed is a critical element. Because the air is so thin at great altitudes, a high-flying sailplane must go faster to stay aloft, reaching the aircraft's top speed of about 150 m.p.h. But the higher it goes, the more that its minimum speed approaches its top speed. Exceed that velocity maximum and structural failure occurs. Pilots call the phenomenon "coffin corner," and the margin for error becomes tight above 40,000 feet.

can cause paralysis and death. Flight surgeons say the chance of getting the bends--the medical equivalent of vapor lock--is about one in 300 if someone flies above 18,000 feet several times a month. The risk, however, depends on the pilot, altitude, length of exposure, and training.

This year, no one gained enough altitude to have to worry much about the safety considerations. Jim Myer made only four or five flights. Koerner simply gave up and postponed equipping his new Ventus sailplane until next season. A wave drought had moved well into its fifth year.

This spring day, the hot desert wind sucks the moisture out of the skin, and sonic booms from high-performance jets based at nearby Edwards Air Force Base rattle the corrugated steel of Harris' hangar at California City. As Myer dons his flight gear, mechanics across the Tarmac work on a red DC-3 that flew in North Africa during World War II. Now, the propeller-driven transport ferries sky divers instead of paratroopers. One motor idles smoothly.

"Great to hear those old reciprocating engines," says Myer, a jet-age pilot who once flew U-2 spy planes. "The days of flying by the seat of your pants is almost gone." But not at California City. "Here, we don't rely on computers and all that stuff," Myer points out. "We are back to basics."

it has been six years since the world altitude record was set.

Myer goes up anyway. Half an hour after being released from the tow plane, the two-way radio in Harris' Ford van crackles. "Got a little wave up here," Myer says. He is gone for more than three hours and gets to 31,500 feet, his best flight of the year. Back on the ground, Myer gets some congratulations but is sheepish: "It's nothing to talk about."

The frustration goes with the airspace. Sailplane pilots often wait years for weather conditions suitable for record attempts. Almost daily, the search for perfect mountain wave takes them to National Weather Service stations where they soak up data to compare with conditions recorded on good soaring days. They become versed on the subtle and sublime.

"You get to know which side of the cloud has more lift, and where the best conditions can be found along the Sierra under certain wind conditions," Katinszky says. "You become an expert in micro-meteorology. I even know how the wind goes around my garage eaves."

If the proper conditions show, everything must be dropped on a moment's notice, because wave can disappear within hours. Weekend outings get canceled. Work and

“People in our family ask us what we’re doing for the weekend,” says Koerner’s wife, Fran, also a sailplane pilot. “And we say, ‘Nothing unless there is wave.’ There is an understanding between us. But some things are aggravating. Lots of trips are made to the airport, and then the weather changes. Many hours of preparation can end in disappointment.”

The phenomena are so elusive that Robert Harris almost abandoned his attempt to break the world altitude record set by the late Paul Bikle in 1961. Frustrated by his lack of progress, he began taking his sailplane apart inside his hanger one day. “It felt like I was going to a funeral,” he recalled. “I took one instrument out of the cockpit and said, ‘No, I can’t do this.’ ”

IT WAS ON FEB. 17, 1986, almost eight years after he took his first sailplane ride, that Harris stopped by the National Weather Service station at the University of California, Riverside. The jet stream crossed California between San Francisco and the Oregon border that day, and a perfectly uniform flow of air was moving across the state. At an altitude of 47,000 feet, winds of 90 m.p.h. to 110 m.p.h. were reported. It was the best set of wave parameters that Harris had seen in many years.

In the overcast and drizzle, he made the 1 1/2-hour trip from his Riverside home to

clouds, towering tens of thousands of feet over the Owens Valley. Conditions were right, and he recalls having experienced a sense of euphoria. At the airstrip, Harris lined up a tow plane to pull his glider toward the clouds. At 12,000 feet, the umbilical was released and Harris started to climb. “I felt like an ant looking up a wall of the Grand Canyon,” he wrote in his flight log.

At 38,000 feet, his foot heaters failed, and the canopy frosted over. Through the plexiglass, the sun was reduced to a dull light. Outside, the temperature was 80 degrees below zero. “I had told myself I would not fly if my canopy frosted over, but I did, using my instruments,” Harris said. “I reminded myself that these types of days don’t come along that often.”

The altimeter passed 46,267 feet, the mark set by Bikle, and the cold caused tears to congeal in the corners of Harris’ eyes. His knee hurt from expanding nitrogen, and he felt as though something was crawling under the skin of his leg. Flight surgeons call that phenomenon “the creep.”

He was still rising when an oxygen regulator failed, sending a constant blast of air into Harris’ face mask. He switched to his back-up regulator. The conditions held out the potential for going higher, but Harris could go no farther. With symptoms of what could become the bends and an oxygen system out of commission, he had to descend.

Though Harris broke Bikle's longstanding record and perhaps went to the limit of human endurance without a pressure suit, no one was on the runway to cheer him when he landed at the Inyokern Airport, about 50 miles north of Mojave. But after Harris took a tow back to California City, Harold Katinszky brought out a bottle of champagne, and Harris celebrated in the airport cafe with a few friends who also had tried to break Bikle's record that day.

"I had a rib-eye steak," says Harris, recalling his aviation triumph. "I wanted the most expensive thing on the menu. Geez, it was a whole $5.50."

Dan Weikel

Dan Weikel covered local aviation, the California high-speed rail project, Metrolink, the MTA and regional transportation issues for the Los Angeles Times before leaving in 2017. He started with the newsroom in 1989 and previously covered courts and transportation in Orange County, the ports of Los Angeles and Long Beach as well as substance abuse, environmental issues and law enforcement as a member of a project team. A native of San Diego, Weikel is a graduate of the UC Santa Barbara and the