

Challenge in the Desert...

By Mike Echo

Once you have tasted flight you will walk the earth with your eyes turned skywards, for there you have been and there you will long to return.

Leonardo da Vinci

Of all the aircraft I have flown, recreationally, I favor gliders the most.

It's a couple of months since I rediscovered soaring and I've accumulated some 30 hours of glider time. I'm curious and anxious to know and experience more about this unique form of flight and I'm ready for more excitement.

The ultimate in gliding is cross country soaring. I've heard stories of flights--out and return, for a thousand kilometers (roughly 862 miles), and 500 km and 300 km are even more common - but it's still quite incomprehensible to me. I'm wondering if I can catch a glimpse of that experience.

A glider is essentially an airplane without an engine. It's designed to minimize drag (anything that resists smooth air mass penetration) and to maximize lift (the force that pushes it up). Never-the-less, to stay up, favorable atmospheric conditions must prevail and pilot's skills are also an essential factor.



Minden Nevada, I've been told, is the Mecca of soaring. Nestled in a valley, at the foot of the towering Sierra Nevada Mountains, the airfield is some 4,500 ft above sea level. It enjoys unusual thermal activity in the hot Nevada summer and tremendous mountain winds (known as Mountain Waves), in the fall and spring.

I call one of the local glider operators at Minden/Tahoe airport, and ask what kind of experience I would need to fly their gliders. I'm told that with my "power" background, 50 hours would suffice, *if* I pass a

check ride. While I have a good number of *power-time*, I hardly have any gliders experience and thus am quite apprehensive of being rejected. So, I lie and tell them I have the minimum required.

I do a little more research and determine that the best time to go would be in July, only a couple of weeks ahead. I call Minden again and buy a seven-day package in a Discus A, a high performance single-seat glider; somewhat more advanced, yet, already lagging behind the fast advancing technology. The package includes unlimited flight hours and a couple of tows to 2,500 ft above ground level (AGL) each day.

My fascination with gliders goes back many years. When I was fourteen, I belonged to an Air Force-sponsored youth flying club. We spent most of our time building gliders and other aircraft models and learning the rules responsible for the amazing phenomenon of flight. We've even been flown a couple of times in twin-seat, open-cockpit gliders. It was an experience I never forgot.



The time had come to go to Minden. I show up bright and early. There is no one on the field to greet me, yet. The air is still and dead quiet. Sandy desert hills in the distance are awash in the bright rising sun. There is the sharp scent of earth, still damp from the morning dew, hanging in the air. The Sierra Mountains, a few miles to the west, cast their awesome shadows onto the valley. I'm standing out there engaging all my senses and absorbing the awe of nature.

At about 11:00 hour, George my check-ride instructor, and I jump into a two-seater Grobe-103 and get towed to 6,500 ft above sea level (MSL), approximately 2,000 ft AGL. Upon release from the tow plane I catch a strong thermal that takes us up to about 9,000 ft and a short while after to 11,000. I'm astonished by the amount of lift all around us. We stay out for about an hour playing in the sky and exploring the valley, before George calls the check-ride concluded and we return for landing. "You can

go up again in the 103, or take the single-seat 102, but don't leave the valley!" he says. "Wow..." I think, while preparing the G-102 for the solo flight.

I spend over four hours in the air, dazzled by the awesome scenery. The towering Alp-like Sierra Nevada range, with its snow-capped Mount Paterson and White Mountain to the west, Nutmeg Mountain and the far-flung desert to the east. Breathtaking. I never imagined it would be this easy, I reflect, as I land back at the field.

Exhausted, but fulfilled, I go to bed replaying the events of the day and thinking impatiently of tomorrow.

Day two. Andy, a senior instructor at the FBO (Fixed Base Operator), approaches me as I'm checking the weather conditions for the day. "Would you like to do some cross-country flying?" he asks. "Sure," I enthusiastically respond. "Then, let's leave immediately." He says, "The weather is perfect." We grab oxygen gear and GPS navigation equipment then get a ride to the twin Grove.

Andy is a man in his forties. He's spent most of his life around airplanes and gliders and has the reputation of being a superb pilot, a fiercely competitive contestant and as reckless as they come--the sort of pilot more typical of the WWII than modern aviation.

It's mid-morning; the wind is from the southwest at 10 to 15 mph. Cumulus clouds are already everywhere, organized in long lines following the wind's direction. The temperature on the ground is around 85° F and the dew point about 30° F. This would put the cloud base, or top of the thermals, at an incredible 18,000 ft, plus-or-minus.

A thermal is what gliders use to climb and stay aloft. It's a mass of air - a bubble, warmer than its surroundings that, obeying the laws of physics, continues to rise until it cools to the temperature of the prevailing dew-point. The dew-point is the temperature at which the air, with sufficient humidity, condenses. The air (and thermals) typically lose heat at a lapse rate of approximately 3° F per 1,000 ft. When it reaches the dew point, clouds form. To estimate the size of a thermal (or cloud base) you take the surface temperature (in this case 85°F) and subtract the dew point (30°F), multiply that sum by 1000

ft and then divide the result by the lapse rate (3°F). Today, the cloud base would calculate to an impressive 18,333 ft. A glider, (or a bird) circling within this air mass could climb from close to ground –level right up to the 18,000 cloud-base, or beyond. Depending on the temperature and humidity, the air may continue to rise, quite violently into the cloud, and up to some very high altitudes. The conditions inside the cloud are hostile and extremely hazardous to all aircraft, small or large.

I climb into the front seat while Andy takes the back. I'm wearing shorts, T-shirt, sneakers and a hat, to protect my head from the blazing Nevada sun—standard gliding gear. “You are not wearing a hat?” I claim. “Nope,” Andy replies, and adds, “I'm a living cancer experiment.” I shrug and continue setting up the equipment... wondering whether he'd be using oxygen at altitude.

A tow plane, lines up in front, preparing to pull us up to about 6,000 ft, some 2,000 ft above the ground. It's hot as hell inside the glider and I'm eager to take off into higher, cooler air. “During the flight, I'll point out some spots where thermals typically form.” Andy says. “Great, thank you.” I could mark these locations onto my charts and use the information for future flights. As Andy and I discussed, we're going to attempt a three points, 300 KM, flight. The tow line is hitched to twin and I signal OK to the lineboy and tow pilot. We are pulled along the runway, rotate, and begin climbing towards the predetermined release point.



I release the glider from the tow plane and start circling inside the “home” thermal. The thermals are stronger than any I've ever experienced, with vertical speed exceeding 1000 ft per minute. After the initial thermal that takes us to almost 18,000 ft we head almost directly southwest until we merge with a northeasterner

cloud street, leading straight into the desert.

Clouds that are organized along the wind's direction are known in the soaring world as Cloud Streets. Under a cloud street, gliders can fly in a straight line at high speed. Depending on the strength of the thermals' vertical speed, they fly along them without losing any altitude. The way it works is that whilst the thermal pulls the glider up and towards the cloud, the pilot resists it by pushing the glider's nose downward, using gravity vector to turn the vertical pull into forward motion. The greater the vertical speed, the greater can become the forward speed at leveled flight. Cloud streets are known for stretching out for hundreds of miles.

We've flown the same cloud street for some 170 km (approx. 105 miles) racing at indicated airspeed of about 120 knots... and still going. Staying, for all that long, in the shade of the clouds I begin to feel the 30° F outside temperature. Meanwhile, I sense the smell of cigarette smoke merging from the back seat—we are both breathing pure oxygen and the mix of oxygen, fire and suntan oil, is a deadly combination, making us a fast moving bomb under the cloud. “Watch that the cloud doesn't swallow us,” says Andy. Making me wonder; what will kill me first, the cloud or the second-hand smoke...



After some 125 miles under the clouds we break northwest towards Silver Ranch, a dry lake some forty miles east of Reno's Class C terminal. The sky now turns mostly blue with some local clouds scattered in the distance, marking possible active thermals. We reached Tiger Junction just in time to connect

with a strong thermal that would bring us back up to 15,000 ft (approx. 10,000 AGL) after losing most of the altitude we had cruising towards a disappointing cu over Silver Ranch, from the safety of the cloud street. At Tiger we are approximately twenty miles north of Silver Ranch and 80 miles from home. With no additional lift and in ideal conditions, the glider would take us some 65 miles before we hit the ground.

It's now late afternoon, thermals are scarce and those still around have gone much weaker. We are rushing southwest towards Carson City (and Minden) to make it before we lose all the remaining lift still in the sky. While I estimate we could reach Carson City, there is no way we could make Minden unless we stumble upon a super thermal—we may need to land out somewhere in the desert... We find no thermals and continue to steadily lose altitude... although the palm of my hands begin to perspire, I'm not yet concerned, even with the prospect of spending much of the night on some remote desert hill, waiting for retrieve. Andy is completely silent. Carson City gets closer and I find a weak, 50-100 ft/min, thermal that brings us up to about 2,000 ft AGL... but no more. I start planning for a land out at Carson City airport. "No matter what you do, don't try and land at Dayton Valley, not very friendly people," Andy suddenly snaps. "I'm planning for Carson City. We may be able to make it "direct" to runway 27," I reply. "O...ka ay," he mutters and contacts Carson City Tower to announce our arrival—gliders do have landing priority over powered aircraft. We arrive with sufficient altitude to enter into a modified pattern and I land the glider at the very beginning of the runway, to allow enough room for the retrieving tow plane to pick us up and conclude the flight to Minden, twenty two miles to the south.

That was quite a thrilling experience for me and despite the premature landing, we managed to complete almost 200 miles--Little that I knew what is yet in store for me. I thank Andy for a great flight and head straight to the sack.

Day three. I show up at the airport bright and early and check out the weather on a soaring website servicing this location—it looks like another good soaring day and I think perhaps I'd hang close-by flying within the confine of the valley. But no, Andy has another plan;

"How did you like yesterday's flight," he opens.

"It was awesome, you know it," I reply.

“Well then, how about a three-glider cross country formation flight? I already spoke to Pat, she would like to join us,” he says without waiting my confirmation and calls Pat to join the briefing.

“We are going up to plus minus 17,500 ft, 500 ft below our Class A floor limit, and we’ll meet at Pine Nut to form our three-glider formation. I will lead. Mike, you’ll fly the Mini-Nimbus, Pat the LS-4 and I’ll load the G-102 with water, to keep up with your gliders’ superior performance...

Let’s go.”

Wow, isn’t that exiting? I’m thinking. The idea of flying formation, some half a mile apart, increases the chances of connecting with a thermal along the way, by at least one of us. When lift is detected, the others join-in to circle and gain altitude together.

“When I announce on the radio the codeword ‘kindergarten,’ we all switch to 123.75, a frequency we can use exclusively,” Andy instructs.



“Sounds like a plan” I announce, and Pat confirms.

We get our equipment and this time I make sure I have a flight logger to record all aspect of my flight for future reference and scrutiny.

It’s amazing, I recollect, only a few years ago, GPS was virtually unknown in General or Commercial Aviation, much less in gliders. Today’s loggers (or flight recorders) record everything the aircraft performs; from directions of flight, maneuvers, number of thermals, attempted and/or flown to altitudes, and distances, all in 2-second intervals. The data gets analyzed for the pilot in almost unlimited variations and then displayed on any PC in a variety of three-dimensional maps, statistical charts, time-condensed animated depictions, and more.

I'm well rested, ready for this adventure, yet quite excited with anticipation. It is about 11:00 h when we're seated in our gliders. The temperature is already blazing at almost 100° F and the remote launching stage is dead-quiet and everything's at a standstill, bar the occasional dust devil and rolling tumble weeds.

Andy takes off first, followed by me and lastly Pat gets launched. I get lucky and upon release I find a thermal that within minutes brings me up to the assigned altitude, waiting for Pat and Andy to catch up. Soon after, Andy announces being at the altitude. Pat is struggling and Andy and I continue to circle for at least twenty more minutes waiting for her. Meanwhile, the lift at the upper deck is almost unlimited. I stay over Pine Nut trying hard to stay below 18,000 ft.

I can see Pat joining the rendezvous just when she announces her arrival.

Andy takes the lead and Pat and I follow at his four and eight o'clock, respectively.

We're flying straight southeast along the Sierra Nevada range, over Flyin Mouse Topa towards Mount Paterson and then turning northeast towards Sweetwater Strip.

The scenery is just breathtaking over the 14,000 ft peaks. Over Sweetwater we bump into a strong thermal and make a few circles to gain a couple of thousand feet or so before turning southwest again. At this point we've been traveling for 03:17 hours; we are at 17,700 ft and approx. 106 miles from home. Below is the Nevada desert with no sign of civilization in sight. This is when Andy announces our return.

"We are going back home, follow me."

I feel quite confident and response with "I'm going for another 50 miles to complete 300 miles out and return, will advise when turning back north."

"OK Mike, follow us when you're done."

I'm committed and pretty far from home over pretty hostile terrains. I'm on my own...

I fly straight for about twenty two more miles and down to about 9,000 over ground level. I figure I will need to climb to about 13,000 to clear the mountains and about 24,000 feet, accumulatively, to reach Minden just when I realize that the lift over the valley had weakened considerably and is diminishing.

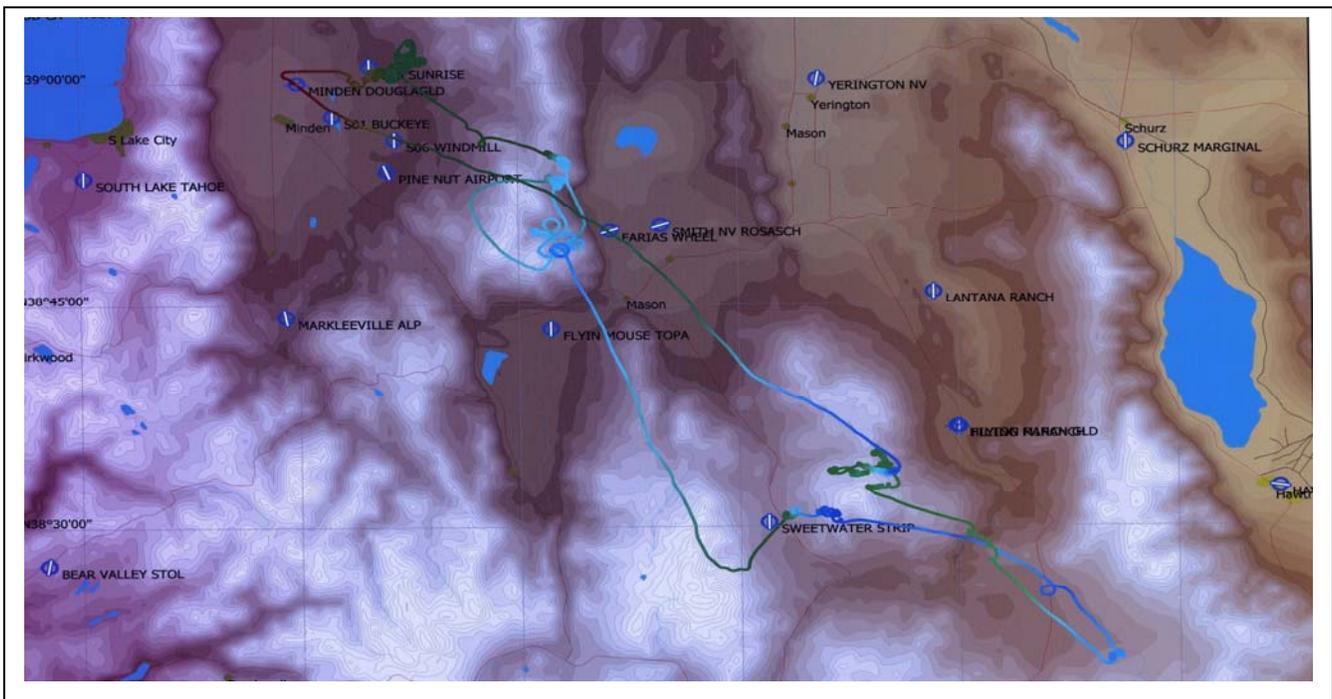
Concern starts lingering in and I decide to turn back with no further delay. I fly back for about 30 miles without a slight detection of lift.

My glider is dropping altitude as does my trembling heart.

Now the mountains look pretty tall above us.

I'm reaching a ridge some ten miles west of Hilton Ranch.

Hilton Ranch, elevation 495 ft, is owned by the famous Barron Hilton. Hilton, a glider pilot himself, uses the M Flying Ranch to fly his gliders in this remote desert retreat. Years later, it would be known as the departing point of adventurer Steve Fossett before the desert crash that took his life. It is also known for its bi-annual Hilton Cup, a week long competition of cross country gliding. The story goes that a glider pilot forced to land out at the ranch, will be treated to a sandwich, ice cream, and a tow back to altitude.



I'm pretty low. I estimate less than 1000 ft over the bottom of that ridge and the ragged terrain. Sweetwater is at approximately 6900 ft elevation. I need to climb some 5,000 feet to get there. For now, all I see is the rocks below me and on the slope leading high up this huge mountain. So, Sweetwater is out of the question but Hilton Ranch may still be an option.

"How're you doing, Mike?" I hear Andy on the radio.

"Two thousand feet," I response.

"You're going down! What's your position?" he adds.

"eight to ten miles west of Hilton Ranch." I report.

"Go for the ice cream or, land in the valley and stay there for the night. Be careful."

I hit a small bump. Its lift! Tiny, but still some upward movement, 'not going down so quickly Andy,' I'm thinking.

"Will advise," I radio back.

I know that by now they're all, at Minden and in the air, listening with anticipation.

I lower the volume and focus on flying my machine.

My vertical speed is between 30 to 50 fpm and I'm circling very close to the cliff, where that little lift is. My wingtips are only inches away from the rock. I can't help but imagine fiberglass debris piling-up down the bottom of the cliff, any moment now.

I'm intensely focused on flying my glider at high angles of attack, steep banks and constantly at the glider's stall-speed, to remain in the crucially needed tight circle inside that baby bubble of rising air. I don't recall ever having to apply this much concentration flying any maneuver in any aircraft and for this length of time. The heat inside my cockpit is just as intense as the tension inside every one of my muscles. But physically, I feel neither.

I once participated in an open-sea swim contest. The task was; a mile out and return. I was very young and pretty good swimmer. I swam vigorously outbound but half way back I got exhausted wrestling

with the waves and currents—I thought I would drown. My head was sporadically submerged in the water in total exhaustion. Suddenly, and in a matter of a quick trice I found myself in a state of unmitigated concentration and complete focus on my survival. My vigor returned and my newly found energy carried me back. I don't recall elements of that last phase. I just remember landing safely at the shore.

My wrestle with this fledgling thermal brings me back to that swimming contest, years ago, in the Mediterranean.

2,100 feet! Here's another kick in the butt. I bank sharply towards the center of the thermal. It's getting stronger... 2,600 feet. Vertical speed is now averaging 350 FPM. Wow, perhaps this little guy is my saver! I circle steadily, extremely coordinated at, or near the yet higher stall speed. I gain altitude at an even pace. 4,800 feet! 5,200; 6,000; and... climbing.

The rocks look smaller now and further away. At 16:41 hour local, I'm at 10,000.

"How's it going Mike?" Andy inquires.

"11,000" I snap.

"That-a-boy, that-a-boy" exclaims Andy, not without relief.

By 17:00 I'm at 17,990 feet. I gained the top 7,000 feet within 11 minutes and 16,000 feet within 40.

"At eighteen thousand feet and heading home," I announce on the radio.

"That-a-boy;" comes the answer.

I breathe freely. It's much cooler up here, the sun is setting in the west and I feel quite relaxed cruising at 110 knots straight home. I figure, with the altitude I'm at I can reach Minden without circling at all.

At 17:26:28 h I land on runway 30 at Minden.

Duration: 5 hours 12 minutes (and 24 seconds); total distance 259.2 miles; average speed: 71 knots and the mood... still up there at 18 thousand.

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