

Oh!***! I Crashed

Bill Gawthrop

N501WG

F8

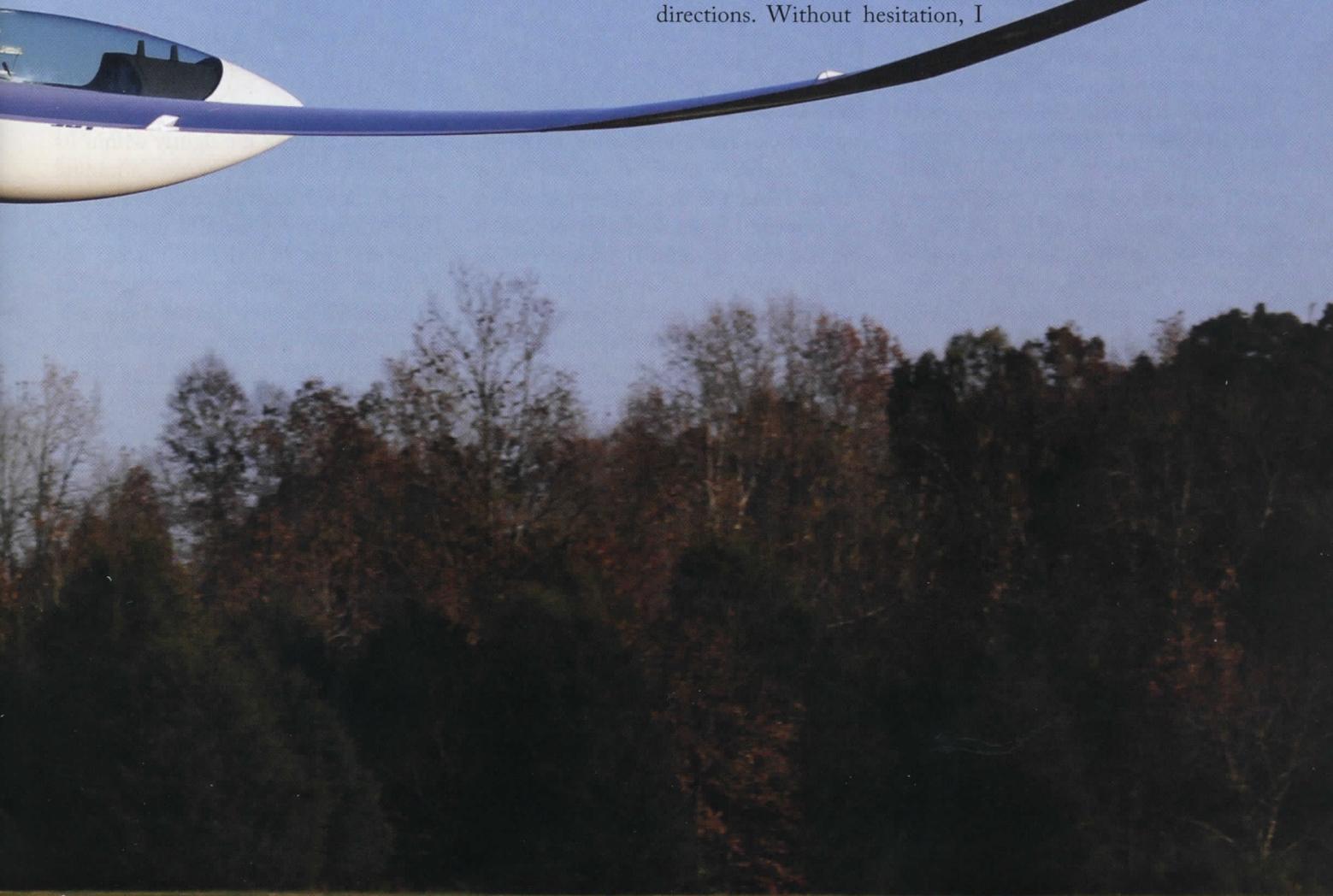
Bill Gawthrop in Foxtrot 8.



On July 13, 2014 in Truckee, California, I had a major glider accident, which easily could have turned out much worse. This day I plunged nose first into a hill just short of runway 20, totally destroying my glider and resulting in a helicopter ride to the nearest emergency room in Reno. In the past I landed several hundred times on this same runway with minimal problems. Since that fateful day, I've spent a lot of time thinking about what I did wrong and what I did right leading up to this accident.

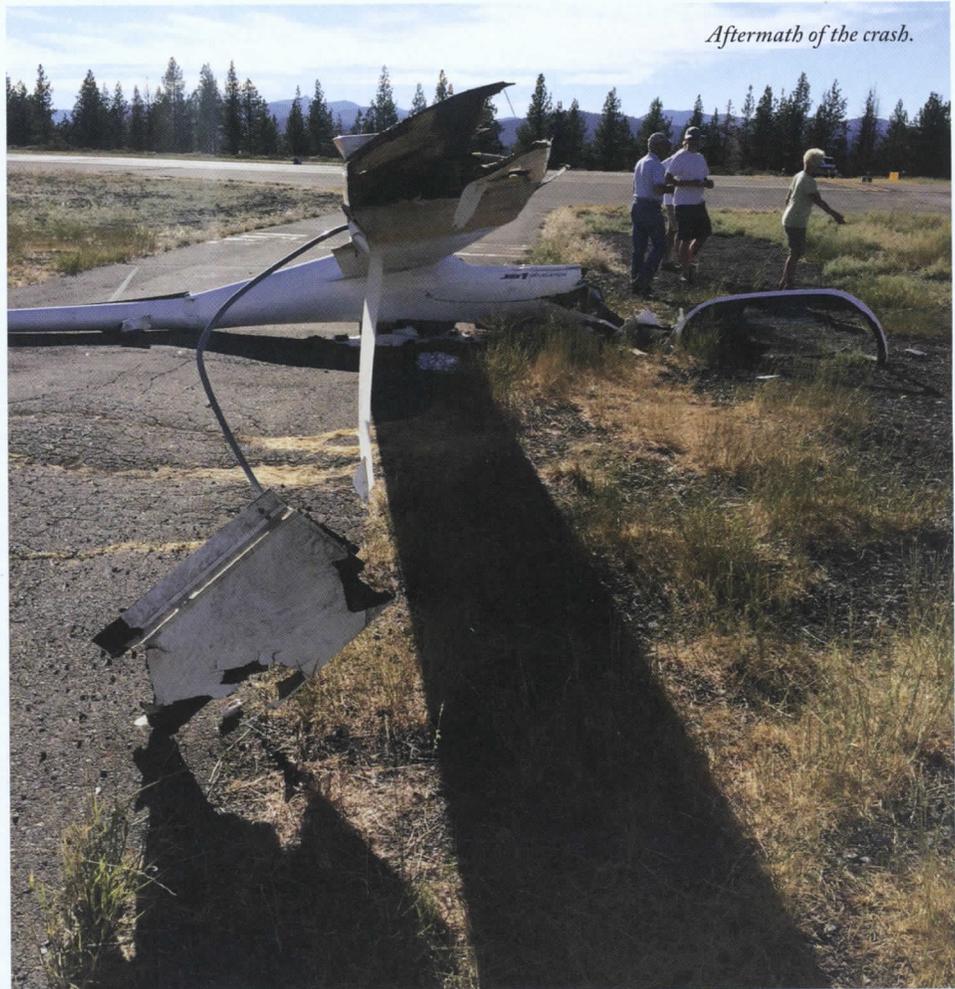
Prior to the crash, life was good. I was enjoying my brand new glider, the JS-1CJ. The week before, I won the 2014 Open Class Nationals. The previous day, I flew in the Truckee airshow, showing off the capabilities and beauty of the jet sustained JS-1 in the 21 meter configuration by doing some fly-bys. I had even survived the FAA ramp check, required for all airshow exhibitors, although I definitely had been very worried about whether I actually had done all the paperwork correctly. The only significant problem with the airshow experience was that it fell on one of the finest soaring days Truckee had experienced all year, and no one could take advantage of the cu's floating majestically in every direction.

This day, Sunday July 13, was forecasted to be just as great a soaring day as the previous day. Cumulus clouds were everywhere, but with no expected overdevelopment. Ramy Yanetz, flying his ASW-27, suggested we all fly north to the Oregon border, but joked that I had to make it to the north Oregon border because of my glider's handicap. I had previously made dinner arrangements with some friends that I hadn't seen for some time, so I knew I needed to cut the flight somewhat short. We all launched around 12:30 into wonderful soaring conditions, with 7-10 knot thermals to 13,500 ft right around Truckee. As forecast, the sky was covered with beautiful flat-bottomed cumulus in all directions. Without hesitation, I



headed north with a 10 knot tail wind. As I continued north, the 21 meter JS-1 floated easily from cloud to cloud, turning effortlessly in the occasional strong thermal. Following cloud streets, it only took an hour and fifteen minutes to make it to the Oregon border, at an average speed of 97 miles per hour. What an incredible day! I still had lots of time before my dinner appointment and the conditions looked even better to the north. Before 3:20, I was at Silver Lake, half way across Oregon, 264 miles north of Truckee. My average speed since leaving Truckee was over 104 miles per hour. Conditions north were still strong and I was tempted to go the additional 36 miles to get a 1000 kilometer out and return flight, or to get even crazier and fly to the Oregon-Washington border, another 173 miles north. I knew I needed to turn around to fly into the 10 knot headwind to get back to Truckee in time for my dinner date. Reluctantly, I started south, following a similar path through the several beautiful lines of cumulus. Returning to Truckee was easier than expected, travelling against a 10 knot headwind with an average speed of 92 miles per hour. Altogether a pretty incredible day.

On final glide, I reset my Mountain High oxygen system to 5,000 feet, something I systematically do after a long flight. At Truckee's elevation of 5,900 feet, I was breathing extra oxygen all the way to the landing. I checked AWOS to get conditions prior to my landing approach, and heard winds 220 at 7 gusting to 15 knots. This was nearly straight down runway 20, the normal glider runway. I knew to be cautious because just north of runway 20 we often experience downdrafts as the runway drops off steeply, at about a 40-50% slope. I made a short pattern as I usually do on this runway to minimize the time I spend in the down air. I turned final about 400 feet north of the runway about 180 feet above the runway. My initial feeling was that at almost a 2 to 1 glide I was going to be too high for the 60 to 1 JS-1, so I started to pull extra spoilers. Suddenly, I was dropping like a stone, being pushed into a left turn by the wind. I immediately pushed in the spoilers, hit hard right rudder, and hard



Aftermath of the crash.

right stick. The glider, after what felt like a freefall, started to respond to my inputs about the time I dropped below the runway. I could see I was too low to make it back up to the runway elevation. About 30 feet from my impact location, I popped the stick back, causing the tail to drop. This altered my impact angle so I didn't go straight into the hill. I watched the ground come meet me at a fairly high speed, which I assume was about 60 knots, my usual approach speed. Next thing I know I'm sitting in the glider facing the opposite direction on the taxiway. From the time of impact to that moment facing the wrong way, I have no memory, even to this day. Witnesses said I had cartwheeled over the runway lip onto the taxiway, landing backwards but right side up. Both wings and much of the fuselage were badly damaged.

My feet were out in the open in front of what was left of the fuselage, the instrument panel and canopy were nowhere in sight, my legs were tingling, and breathing was very difficult. What was left of the fuselage was cradling

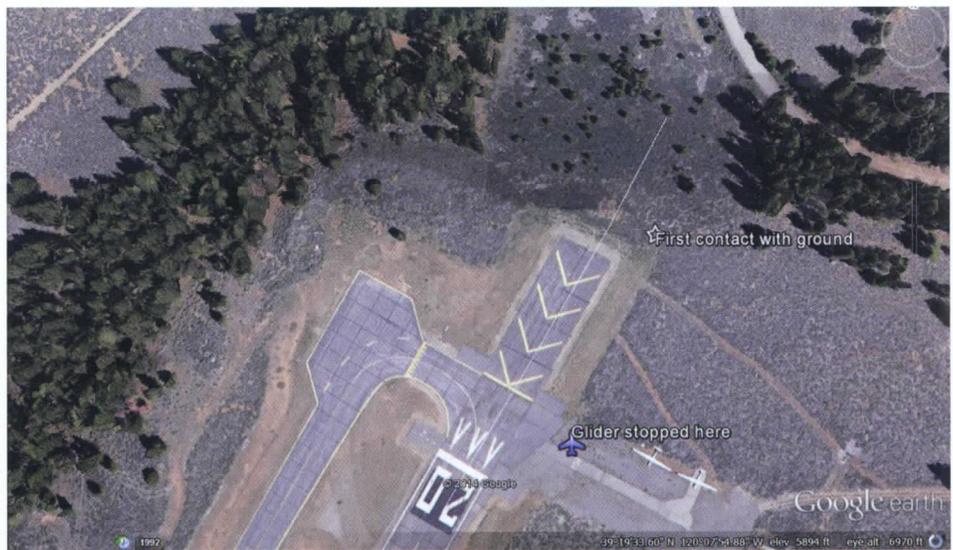
me firmly, keeping me tightly within its confines. What to do? Within a minute people started showing up. I remember Noy Anisman, my favorite line person, being the first to arrive telling me not to move. The gliderport manager Jon Driessen was the next person I saw, telling me he saw a large gust hit the trees all around us just before I crashed. About 2 minutes later, the rescue team from the Truckee airport arrived to take charge. I actually picked a pretty good place to crash as all the necessary resources were quickly on scene. After numerous questions about my health, one of the rescuers commented that it was a good thing it was a glider as there wasn't fuel on board. I started a minor panic by explaining that I did have 10 gallons of Jet-A onboard. All concerns about my health dissipated until I explained how to close the fuel lines and to disconnect the batteries.

The rescuers then explained that they needed to cut me out of the fuselage. My initial reaction was to ask them to please not hurt my new and incredibly beautiful glider, but quickly realized



I had already done just that. They cut open many of my clothes looking for visible wounds; there were none. They put me on a stretcher about the time a helicopter arrived. At this point I was snugly strapped onto the stretcher and hoisted into the helicopter. I asked if they would let me fly the helicopter, but they ignored my request. I was told the pilot was a beautiful blond woman, but I never got to see her.

We had a short flight over the hill to Reno, which I couldn't enjoy because I was so thoroughly strapped in. I couldn't even look out the window. Upon landing they rushed me into the emergency room at Renown Hospital, where numerous doctors casually figured out what to do with my broken up body. Up to this time I hadn't felt much pain, probably because I was in shock. Next thing I know I am being moved off the stretcher to another board. That's when I realized how excruciating the pain actually was. They then put me into a full body CT scanner. A few minutes later, a doctor came to me to say that I was pretty broken up, with 2 broken ankles, four cracked vertebra, one severely, and two cracked ribs. The good news was that all the fractures were stable and I would recover fully in time. They again moved me with excruciating pain to a hospital bed. It took two days before the morphine started to become effective. I spent two months in a wheelchair and have endured a lot of pain since then. I hope to never repeat this experience or



have any other of my glider friends have a similar fate.

I came to realize just how lucky I was. When the glider cartwheeled it had a 50% chance of stopping right side up. If it had come down upside down, I likely would have broken my neck or worse. The location of the crash being within site of the gliderport at a location with a rescue squad on call was again very lucky. It was also fortuitous that I was airlifted to Renown hospital in Reno, with one of the best emergency rooms and rehab facilities in the country.

Two days after the crash, I was paid a visit in the hospital by the same FAA inspector who ramp checked me 2 days prior at the airshow. He told me he had checked the weather records at the Truckee airport and that the winds had shifted suddenly to 260 gusting to over

Crash site.

20 knots about the time I arrived, lasting only a minute or two. This direction can sometimes cause a rotor just short of runway 20 which could have caused the strong sinking of the glider. The apparent downdraft, however, struck at a much higher altitude than would be expected for a rotor off the trees and the descent was very rapid. I suspect that a small microburst that lasted only a short time forced the apparent downdraft that I experienced. Had it happened when I was on downwind or before, I would certainly have turned to land runway 29 which doesn't have any rotor problems and would be almost directly into the wind.

Here I sit five months later, now off morphine and several other prescribed

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pain pills, nearly back to full health, pondering the meaning of this episode. I have read that accidents usually are caused by a cascading sequence of errors, removing all the good options. Was it partly because I was too tired, not thinking well, as I was coming in to land? Probably not. I was coming off eight days of rest since I had flown with any intensity, and this was a shorter duration flight than my average non-contest flight from previous years. Was it because I was thinking poorly due to insufficient oxygen? Again not likely. I had made it a point to have my supplemental oxygen stay on all the way to the ground and had checked it shortly before landing. Was I dehydrated from not drinking enough during the flight? I had spent a lot of time in the sun the previous day, but I don't believe this was a factor as I had brought as much water as I usually do on much longer duration flights and had been drinking adequately throughout the flight. Was I flying erratically on my approach to the runway as someone reported? My flight log doesn't support this. Looking at my trace, which unfortunately stopped when I was on final approach about 400 feet from the runway, I saw that my pattern up to that point was virtually identical to several previous landings on that same runway. Was it because I hadn't checked the wind conditions or observed the windsock before turning final? I had checked the winds by listening to AWOS just before entering my landing pattern and had checked the windsock on downwind to verify it matched the AWOS reporting. The shift in the winds happened after I had turned final. Was I being too complacent, having had so much success the previous few weeks and coming off such a wonderful flight? This was my first landing to runway 20 in my new glider, so I was more attentive than usual to my approach and pattern so I don't think complacency was a factor. Was I too low on my final approach? Well, obviously yes; I didn't make it all the way to the runway. My thinking was that having a 2 to 1 glide to the runway was adequate for a 60 to 1 glider. I usually anticipate touching down about 200 feet down the runway allowing for the kinds of downdrafts that I had experienced before at

this location. Although my pattern this day was almost identical to my previous patterns to this runway, a check of patterns from others landing here on the same day indicated that I was flying a much lower and shorter pattern. I had started to fly this truncated pattern a couple of years ago after experiencing the rotor thinking that this was the best way to avoid the problems associated with the rotor. It is likely that if I had been higher on my final approach that I would have hit hard on the runway instead of short of it, but would have fared far better than I did. It is also possible that had I been further out when the downdraft struck that I would have been in it longer, perhaps resulting in hitting lower on the slope.

One possibility of what have happened to cause this crash was that I had experienced a much stronger than what I had considered the normal downdraft at this location. I don't know if it was simply a much stronger event than might be expected from a normal rotor or actually a small microburst gusting over the whole area. I personally have witnessed two other people dropping below runway 20 on approach due to strong downdrafts but they both had sufficient energy to get back up to the runway. I have been told of others having experienced similar problems short of this runway on landing, with one of these incidents proving fatal for a glider pilot several years ago.

I have been caught previously in two frightful microbursts, one in a hang glider and one in a regular glider. Both times I experienced minimal control capability similar to this event while almost in freefall, with both occurrences stopping very dramatically about 100 feet above flat ground in what I believe to be the very compressed air at the bottom of the microburst. Since the ground was flat in those circumstances, the air was forced to stop its descent and change direction to moving very strongly horizontally. The first event in the hang glider causing me to rapidly lose nearly 3000 feet resulted in a hard landing and a dislocated shoulder. In second event near Parowan I rapidly lost about 2500 feet and caused me to think a broken glider was the best possible outcome that would result, and death or major

injury was a real possibility. Fortunately the dust blowing horizontally below me was rising very dramatically close enough for me to reach before hitting the ground. This gave me just enough lift to make it to the runway. While I don't believe this event at Truckee was a full-on microburst, it seemed to be a very strong sinking air event vastly stronger than any I had previously experienced or expected to happen at Truckee. Because the ground slopes down short of the runway, the air doesn't get a chance to compress, so it can continue down much lower to the ground. These anomalous winds are described quite elegantly by Bob Thompson in the October *Soaring* magazine titled "Rogue" *Air Currents*.

Another possibility suggested by Richard Carlson of the Soaring Safety Foundation (SSF) may actually be the most likely cause of the accident. The strong gust of wind was 60 degrees from my flight path based on the readings at the Truckee weather station, an anomaly on the weather readings that day. My forward speed relative to the wind would have dropped significantly when I passed through the wind shear of this oncoming gust causing the wings to significantly lose lift. So rather than a downdraft causing the violent drop it could have been caused by the wind shear. To be safe in the future I will take into account the SSF recommended approach speed from the formula $1.5 V_{so} + \frac{1}{2}$ the wind speed + a gust factor. The gust factor is the difference between the steady state wind and the peak gust. This says my approach speed should have been about 70 knots instead of 60 knots. My inclination is that with this strong anomalous wind gust an even higher approach speed would have been needed to avoid this major loss of lift.

I want to know my flying behavior will change to minimize the possibility that any future downdraft or shear occurrence will result in another crash. In the future, I plan to come in steeper and faster on a longer final approach to have more time to react to the gusting air that I am likely to experience again. Most of my flights are long duration with only a single landing, so I usually don't get sufficient practice honing my landing skills. My plan this year is to start the season



doing a series of pattern flights with an instructor to relearn some of the basics.

Another factor in my approach to this runway is that Truckee has a high speed turnout not very far down the runway for gliders to exit. This has tended to push me to land fairly short to be able to make this turnoff and avoid the longer recovery. What I could have done this day and probably will do in the future at Truckee is to plan to use much more of the runway taking advantage of its length. Fortunately the ground crew at Truckee is very friendly and will happily retrieve gliders from later exits off the runway. I want to continue to push the bounds of what is possible in a glider while still trying to minimize risk. I also will think more about fluky winds that do sometimes occur in the mountain environment that I love to fly in.

Did my actions just prior to crashing help to improve my chances of surviving the crash? In some ways, I think they did. I continued to fly the glider all the way to impact, thinking just before hitting "what can I do to minimize my injury." Changing the angle of the glider by popping the stick back just before impact I am sure reduced my injuries and likely saved my life. I do, however, think that if I had relaxed my legs and bent my knees right before the impact, it would have significantly reduced my injuries. The only real strong shock to my body was through my feet. By pushing hard on the rudder pedals and keeping my legs straight, I allowed the shock to keep my skeletal structure rigid while the rest of my body wanted to keep moving. Doctors told me that the cracked and crushed vertebra and the broken ribs likely resulted from ligaments yanking on my bones. Relaxing my legs probably would have allowed my entire body to absorb the shock as a whole structure. If I ever experience another crash in the future, I hope I remember this lesson.

One thing I had done well was that I had recently purchased Alan Silvers Smak Pack Survival kit that mounts on the parachute strap. It held my DeLorme tracking device within easy reach where I could have sent an SOS if I had landed elsewhere. If it had been attached with Velcro anywhere else within the

glider, it would almost certainly be thrown out of my reach. I highly recommend people get one of these for just such a circumstance.

I am convinced that the design of the JS-1 fuselage saved my life by absorbing most of the collision impact. I don't know if it was designed to cradle the passenger after losing the canopy and the front one foot of the fuselage, but it sure helped to reduce my injuries. The good things that have come out of this is that I am returning to my old crazy self with reasonably good health. Costello Insurance has been very easy to deal with, helping me to purchase another glider with the insurance money. Jonker sailplanes is going out of their way to get me a new sailplane soon, so I can look forward to flying when the 2015 season opens and allowing me to compete with it in the world competition in Australia in 2016.

What struck me the most is the warm and concerned reception I received from the gliding community. Many people made the trip to visit me in the hospital, some coming as far as Colorado. I very much appreciated the phone calls and emails from numerous other pilots and friends that made me feel great in spite of my circumstances. I wasn't able to return all the phone calls, but look forward to thanking these people personally. I am truly blessed to be a part of such a friendly community. I especially am thankful to my beautiful and understanding wife for taking care of me through my recovery. And I am truly thankful for the locals at Truckee and the rescue squad who helped me shortly after the crash.

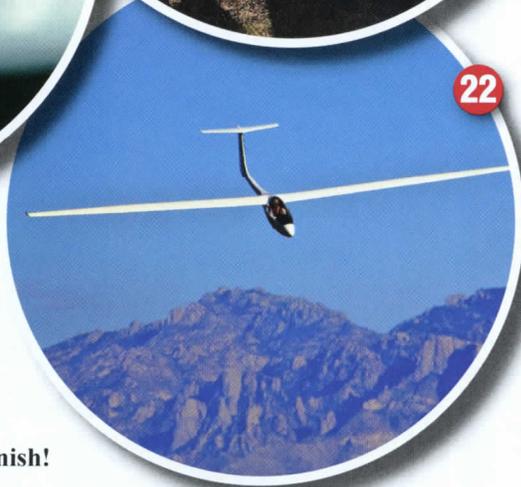
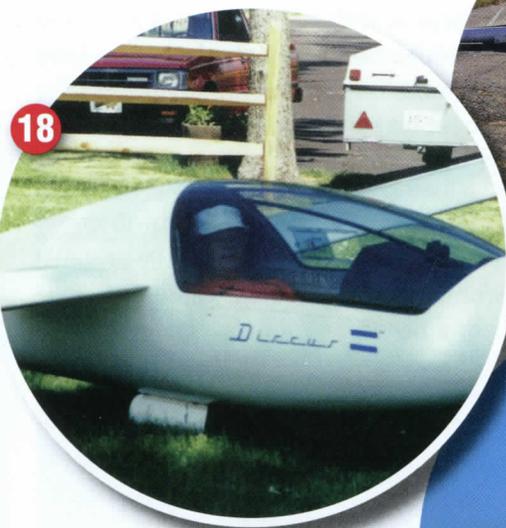
About the author: Bill has been flying sailplanes since 2001, after too many bumps and bruises flying hang gliders. He has won 6 regional competitions, and recently the Open Class Nationals this year in Montague, California. He won the Barron Hilton Cup western region in 2007 and has enjoyed competing in the OLC for several years. He is extremely excited to compete in the 2015 Pan American Gliding Championships in Chilhowee, Tennessee, and the World Gliding Competition in 2016 in Australia. ✈

The advertisement for Craggy Aero LLC is set against a background of a stylized, glowing blue and white wing or glider shape. At the top, a circular logo contains the text "Aeroequipment Solutions for Sailplanes" around a central blue letter "A" with a pink lightning bolt. Below this, the text "Craggy Aero" is written in pink and blue. A yellow lightning bolt graphic points to the text "Craggy Aero Ultimate L657™". Below this is a small black rectangular device with a screen showing a map. In the center, the text "lx nav" is displayed in white on a blue background. Below this are several pieces of equipment: a larger screen displaying a map, a small black box, and two circular gauges. The text "Butterfly Avionics" is written in white with a red butterfly icon. Below this is a circular gauge with a white face and black markings, showing "2468m", "1.4", "09:36", and "868". At the bottom, the "lx navigation" logo is shown in blue. Below that are the "MH Aviation Oxygen Systems" logo in red and white, and the "POWER flarm CORE" logo in red and white. The text "Craggy Aero LLC" is in large black letters, followed by "530-905-0062" and "www.craggyaero.com". At the very bottom, the slogan "Almost everything for Sailplanes" is written in black.

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Front Cover: Nigel Cripps climbs north of Phoenix, Arizona, February 27, 2014, in his ASH-31mi. Photo by Bob Thompson

Centerfold: Dan Gonzales is flying his AS-W20BL out of Bishop, California, on a sunny July day, taking advantage of the rising air blowing up a high south-facing ridge in the White Mountains on the eastern edge of the Owens Valley. These ridges are dotted with the ancient Bristlecone Pines which have a tenacious hold in small sections of the highest slopes, and it is not uncommon while cruising low over these slopes, to see wild mustangs or mountain sheep roaming the heights. Photo by Rick Leffingwell.