

The Mountains Win Again

Following my unfortunate aerial divorce from my HP-14 sailplane on 14 Oct 15, I had a great deal of trouble understanding where in the chain of events I made potentially critical mistakes, and how the end result I came to could have been altered. The risks associated with mountain wave flying are generally well documented, however when faced with multiple risk factors simultaneously, the determination of which factor to address first can make the difference between a safe downwind landing and a bailout or fatality. The following paper attempts to document first a brief synopsis of my flight, and then provide an analysis of factors and decisions that surrounded the flight. It is my hope that though an open analysis of the timeline, data, and my psychological processes and thoughts, than on some other day another pilot will recognize and properly diagnose the challenging situation I found myself in.

Part I – Flight Synopsis

With the exception of the higher levels of moisture in the forecast, the day looked to be a very strong wave day, with the mountain-top wind speeds dipping down to 37mph directly out of the west, with a very favorable wind gradient starting around 1800Z that seemed stable all the way up from a mid-level tow to 35 or 40k feet. The early morning forecast seemed to dim that prediction, but by 1530Z when the club Puchaz reported that the ridge was working strong, I figured it was certainly worth a try.

By 1630Z I was in position and ready to launch, and the weather seemed to be clearing a bit, with a visible Foehn gap appearing behind Mt. Adams, where I have had significant luck in the past catching a reliable wave. Although this was the first time in a while that I have attempted a zero-flap takeoff, the launch was arguably one of the best I have had in a while, with minimal deviation from centerline and a smooth transition into flight behind the tow plane. The turbulence on tow (1630-1635) was quite substantial, and arguably the most challenging I have faced in this location, and maybe more so than I have faced while flying out in Colorado.

I released at 5000 ft, just behind Mt. Madison, and headed immediately towards a Foehn Gap that seemed marginally stable, but rather small. Upon arriving at this smaller window, I decided that it was too risky to attempt to climb up in this area, as the gap appeared to be already closing. After putting in 30 degrees of flap to descend back safely below the cloud deck, I moved slightly farther down the valley in zero sink to the much larger and better defined primary window, where I was greeted with a fantastical climb to 17,500 feet in under 20 minutes (1640Z). As I was nearing FL180, I was forced to move out of the stronger lift, and so I pushed upwind in order to maintain 17.5k until the airspace could be opened (1700Z). At this time, there were still multiple open holes that I could have descended through, as well as the entire east behind me was still open.

While waiting in this stable configuration, I began to hear reports on the ground of precipitation moving in, as well as the cloud deck thickening and beginning to close the window. For the first several minutes, I figured that at my current altitude I would be more than able to stay aloft and avoid any issues, provided that at least a few options remained open, but as the radio calls began to increase and I was warned that the primary was closing, I decided it would be best to retreat down through the last two remaining holes in front of me and then jump back onto the ridge until conditions improved (1710Z-1716Z).

As I dove for the hole, with sink rates averaging around 20kts and peaking at over 30kts, the primary window I was aiming for closed completely, and I was forced to divert to the last remaining window,

which was farther south. Once arriving at the last remaining window at 8400 ft, I found that I was able to vividly see the NH foliage at the bottom of the environmental toilet bowl I was spiraling down, with very little gap between cloud base and the southern slope of Mt. Washington. I then confirmed with my Oudie flight computer that I was indeed several miles south of the peak of Mt. Washington and would be unable to reach a land-able spot if I attempted to go out the bottom of this gap. For roughly the next 10 minutes (1719Z), I attempted to climb out of the cloud bowl that I was in, but soon became disoriented as to the upwind and downwind sides of the quickly closing gap, and was soon unable to maintain VFR flight (1724Z).

After entering IFR conditions, my first reaction was to utilize the flight computer to aim my ground track vector north and east, so I would travel back into the lowest part of the valley (1725Z). Knowing that with no instrument time and no instruments available to confirm my orientation my chances of keeping the glider straight and level in a several thousand foot thick cloud cover was next to nothing, I decided to put the aircraft into a 90-degree flap benign spiral so that I could descend through the cloud deck. The HP-14 had no issues maintaining this condition, and performed three stable spirals that allowed me to descend an additional 2000 ft down to 6000 ft MSL (1726Z).

As I crossed through 6400 ft MSL without seeing any sign of the cloud base, I determined that I was far more likely to spiral directly into the mountainside than I was to come out from under the cloud base with any safe exit options, as I was not below the peak heights. I then decided my safest option left was to bail out of the glider while I still had enough altitude for the canopy to open (1727Z). Prior to exiting the aircraft, I put on my survival backpack (with my log books and registration) backwards on my chest and grabbed my LX Nano flight recorder off of the console, considered what I was about to actually commit, placed my right hand on my parachute D ring, and then jumped, arched, and pulled at 6000 ft MSL.

The canopy opening was far less dramatic or painful than my previous 5 jumps at the Air Force Academy, with a distinct lack of pain normally associated with being jolted upright by a strap between your thighs. In this case, however, I had dropped rather low in the harness, and was taking most of the weight and pressure on my upper arms, making steering the canopy right difficult, and left nearly impossible.

In my canopy ride to the ground, I was able to determine that I was now about 2 miles west of Rt 16 and about 3-4 miles south of Mt. Washington, and began attempting to steer the canopy by pulling on the right riser. By sequencing this tension on the riser I was able to make better use of the wind, and ended up shortening my walk back to Rt. 16 by over a mile.

I ended up landing in between two trees, about a foot from one and three feet from the other, with no hope of freeing my canopy from the top branches, so I was stuck about 30 feet up in the air (1730Z). I was able to shift my position slightly by kicking the closer of the two trees to swing myself out and around in order to grab on to one of the conveniently located branches. From this point I was able to wriggle myself out of my harness and hold myself up on one of the straps, while freeing my emergency bag with the other hand and tossing it down on the ground. I was then able to carefully slide down the tree, gather my belongings, and first call 911 on my emergency backup cell phone (my primary phone didn't make the trip with me).

After discussing my location with the 911 operator and them telling me that I was about 5-10 miles from my actual position, I headed down the mountain slope in my nice down slippers, considering all the various ways that nonchalant hikers generally cause serious injury when walking down a slope covered in wet leaves in the 50-degree rain. Unfortunately, when I attempted to locate my actual GPS position

by pulling the data from my Nano flight recorder on to my cell phone, I found that this is not currently an option, but was unable to get cell phone signal to call 911, so the point was rather moot anyway. My trip out of the woods was rather uneventful, as I was able to follow the gradient directly down the mountain about a half mile to Rt 16, where I exited at Mile marker 95.8. At this point I called 911 again, and told them I was out of the woods and on Rt. 16, to which they responded that there were no emergency services personnel available to pick me up. After doing jumping jacks by the side of the road for several minutes I managed to convince a wonderful local Doctor and his daughter that I was indeed not just a lazy hiker but someone actually in true need of a ride back to the Gorham Airport, where I returned uneventfully.

Part II – Post Flight Decision Analysis

- a) **The decision to fly that day** – Despite some marginal reports from the first ship that flew in the morning, the weather appeared to be quite closely following the forecast, and was dramatically improving when I made the decision to launch. The pilots in the Puchaz who returned just prior to my launch had seen the Foehn gaps in the valley, but did not feel comfortable climbing up through them, as they felt there was too much moisture in the environment for them to comfortable climb up. The report that I received from when they landed was that the ridge was working and that there was a window, so I decided it worthwhile to at launch and see how the window looked. The excessive moisture had been discussed early on, but was forecast to continue to improve throughout the day, and appeared to be doing so, but was enough for one of the Puchaz pilots to be concerned about precipitation imminently moving into the area. Unfortunately, I was unaware of this PIREP until long after I returned to the airport following my bailout.
- b) **The decision to go up through the Foehn gap and climb.** – I believe that I was most definitely focused on climbing as fast as possible, and was incredibly excited about the notion that the weather was predicted to support an attempt at breaking the altitude record on this day. After rejecting the first Foehn gap, I was definitely more hesitant than usual to climb up once I did connect with the primary wave. The dark shade of the clouds I was flying under and challenging rotor I was encountering may have been good indicators as well that it was too dynamic and moist of an environment, but it was not so much worse than other days that I would say without being a Monday morning quarterback that I could tell the difference. As I did climb through the hole, and for the remainder of the 20 minute ride up to 18,000 ft, the local area appeared to be opening up, with at least 6-7 windows opening and widening, as well as an easy escape to the south and east. The one visible factor that was present that I did not appropriately diagnose was a single cumulous cloud upwind of the wave that was probably a thousand feet taller than the surrounding layer. In my debriefing, I was made aware that when you see this sort of formation, it is entirely possible for it to close up a Foehn Gap that would otherwise be impervious to closure.
- c) **The decision to Dive for the primary window** – When I made this decision, I believe it was drawn primarily from some combination of “get-there-it is” and a residual fear of going cross-country from my very limited experience in this aspect of the sport. As the reports were coming in that the weather had drastically and rapidly turned from a clearing great wave day to an overcast precipitating nightmare, I did make the conscious decision to descend. In the five minute period that I made this decision, the number of available holes decreased down to 2-3, with the farthest north being the primary wave behind mt. Washington, and the previously open area to the southeast appeared to be already closed up. My perception at this point was also

flawed due to the higher lenticular that was sitting between 16k and 18k, which obstructed my actual view of a potential downwind run.

I cannot say if that had that cloud not been there that I would have opted to fly to Maine of my own volition, as my mindset was very focused in a local flying mindset, and I saw the two remaining holes as my most comfortable and safe way down. As part of my remedial training, I absolutely plan to address this aspect of the sequence by increasing my dual cross-country training, as I do strongly believe my “turn at the second tree” attitude towards flying in the area contributed to this decision. I believe that flying for years as a primary instructor without a healthy dose of cross country flying severely reinforced this mentality. The problem was not so much my fear of my pilotage skills to safely land at a strange airport, but the psychological confidence to cover the ground to get there, even when you have the airport made with 10,000 feet to spare. Had I known that there was another pilot up at altitude with me and had been communicating with him at the time, I probably would not have dove and would have had a much more developed plan that would have resulted in the same downwind landing that he successfully made.

To most cross-country pilots, the notion of being scared to head downwind with 10k to spare is probably laughable, but this is very much a learned confidence and skill than when removed, leaves the around-the-patch pilot thinking about only the local option, even if on the ground he may be able to easily discuss the theory of what he should do. The fact that flying in the wave camp requires sharpened skill sets and proper preparation is certainly not a new notion, however I believe I deceived not only the other pilots but myself into believing that I was fully prepared to approach this decision set with a set of skills that did not include a competent level of cross-country experience and comfort. This may very well be true for a lot of other pilots who do not practice cross-country soaring on a regular basis, and in my opinion is a very strong argument for why more clubs should be promoting cross-country flying for more than just because it is more fun than traveling around the patch again.

- d) **The decision to keep diving after the first hole closed** – When I further looked into where I chose the less than optimal decision, this was the first place where I realized that I had fallen into a classic human mind trap. The only way I can explain my continued pursuit into the second hole after the primary closed is exactly how a very helpful soaring sage explained to me as I received my first truly helpful debrief after the incident. An effective way that people have trapped monkey historically is to cut a hole in a coconut just large enough to fit the monkey’s empty hand in, and then place something the monkey wants inside the coconut. As the monkey struggles to retrieve that which is so desirous to him, he fails to see that his single-mindedness on his task is ultimately his downfall, as he cannot fit his hand with his prize out through the hole. The same was true for me as the traditional main Foehn gap behind the horn closed up. At first, diving for it was my plan, when my plan looked like it didn’t work, I became more determined to make it work, and dove faster and harder for the second hole, because I was entering the realm of *needing* to make it work versus *wanting* to make it work. This was also probably the last decision point that I crossed in which I could have reasonably had options that would not have caused enough damage to total my glider.
- e) **Not going through the last hole and Bailing Out** – When I reached the last hole, I was able to vividly see the foliage on the western face of Mt. Isolation. Not vividly in the way that you would enjoy the fall new England colors, but rather in the way you remember exactly what the other

car in an accident looks like when you turn your head just before they T-bone you. In this situation, the clouds seemed to almost be at the tree level, and I did not have confidence that that I would have nearly enough altitude or performance to slide over the trees and under the clouds while flying down the lee side of a slope. When my only other option of climbing back out resulted in complete inadvertent IMC flight, I decided to just head for lower ground and used my flight computer to go down into the valley.

While I was executing the last decision, I immediately realized the futility in attempting to fly level through a mountain valley with an unknown cloud thickness or ceiling without an artificial horizon, but I remember thinking that this will probably all work out, because for me, it always does. I figured I would probably just land in the valley somewhere and be fine. As soon as I recognized this thought, I knew that I had already gone too far, and put the glider into its hands-off stable spiral configuration of 90 degrees of flap, and began descending from 8000 ft. When I had not broken through the bottom of the clouds at 6400 feet, I knew that I was now below peak height, and my chances of not flying into a *cumulogrinitis* cloud were just about all but gone. In the hour and a half of thought process that occurred in the next minute or so of flight, I considered a great many things unrelated to flight, such as my wife and daughter, and then finally how all of that weighs in comparison to the cost of a glider and damage to my ego for bailing out of a perfectly (and with the HP-14, I mean *perfectly*) good aircraft. That's how I made my decision to bail out, because at that point it was no longer a decision but a simple process of gathering my things, opening the canopy, and then Jump...arch...pull. Post flight analysis showed that I had roughly 2500 feet left, or less than two more rotations of the benign spiral, before I would have hit the ground.

After writing my first article on properly preparing for the wave camp and my experiences there, this analysis does seem a bit ironic, if not deserved. As is the case with many accidents, I made one or two less than optimal decisions that required a further increasing amount of pilot skill and decision-making as the chain of events unfolded. If I were to replay the scenario with no more information than I had when I was up there, I believe that I probably would still have made the same decisions and had the same result. There were two things that I believe could have altered my mental state enough to have changed the outcome of the day: greater confidence and skill in cross-country flying and communicating my plan with both pilots on the ground and the wingman I didn't know I had up there. Rather than doubting my existing skills as an around-the-patch pilot and instructor and fearing to get back in the cockpit, this experience has intensely laid out the path that I need to take in order to truly be a better pilot, a safer pilot, and a more effective instructor.

I welcome any and all feedback, criticism, or comments you may have

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