



Las Vegas Valley Soaring Association

P.O. Box 19902, Jean, NV 89019-1902 Phone (702) 874-1420 www.LVVSA.org

Volume 11, Issue No. 4

May 2006

Jay's Notes

This newsletter is larger than most because Keith Colmer (Coma) wrote a very detailed analysis of his off-airport landing a couple weeks ago. It's an excellent article with enough material for all to find something to chew on. Coincidentally, the next week I got to practice my off-airport landing skills with similar success but that's another story for next month's letter.

I do want to emphasize that the Hot Summer Soaring Season is very different from the rest of the months and that the STRONG lift conditions will also create STRONG sink. Proper planning for any flight is important but it gets more so when the temperatures go up. Proper clothing, hydration, and eating will help to keep you alive on a long flight as well as waiting around the airport for the next Club glider flight.

With this in mind let's all try to do a few extra things this summer:

- Keep the interior of the gliders, especially the seatbelts, covered with a pillow or sheet to keep the heat off the metal parts.
- Bring the cushions in on Sunday evening since the canopy edges are not watertight. It's not fun sitting on a wet cushion.
- Bring plenty of water, sunblock, and a hat for yourself. We are trying to keep the fridge stocked with water but it goes quickly. Bring a refillable container that you can fill from the larger containers in the fridge.
- Watch out for each other. Get the tow-pilot or instructor some water.
- Don't let your fellow member go flying if you notice he/she is unprepared.
- Get an instructor or seasoned member to review your plans and discuss with them some of the hazards of summer flying.
- Review your flying plan for that day with other members and check in at least every 30 minutes so we will know where you are.

We will be discussing the idea of early morning student flying and training at the next Club meeting (10 am, Sat 17 June). This idea will keep the tow pilots from doing so many pattern tows in the heat of the day as well as get more use from the gliders and instructors. It will require extra volunteering by our tow pilots so we can have more than one each day.

Thanks, and FLY SAFE!

Jay

Grob 103 Off-Airport Landing

Introduction

Bill Tisdale asked me to write-up an account of my off-airport landing experience, detailing what happened, why I made decisions that I did, and most importantly how could it have been prevented. Many of you probably have experience with land-outs – probably in the attempt of longer cross-country flights – but with specifically chosen locations and known landing conditions. I would have rather had this experience in the pursuit of a 500 nm cross country flight, however I gained a few bits of knowledge along the way and a new outlook on aeronautical decision making as it pertains to gliding flight. Fortunately no one was hurt and, as luck would have it, the glider flew again the same day with a lot of effort by some hard-working club members (thank you).

I've been flying a long time and have never hurt myself or an aircraft – we were very lucky! As Bill said the only thing bruised was an ego or two – and I'll gladly do my penance by recounting the story, conveying my errors, and hopefully providing some information that might prevent a more serious mishap in the future. Like they say – “it can happen to anyone” – just make sure it's not you ☺

Summary of the Flight

The flight was the second flight (third tow of the day) for the Grob 103 on the 21st of May 2006 (Saturday). Field conditions were good for both ridge lift and thermals – with cloud streets observed from Big Bear, CA, all the way to east of Jean and winds 10-15 knots from the southwest and increasing. Two previous flights had occurred that morning. One was the first flight of the day, by the Grob, flown by two visiting corporate pilots. The second tow of the day was the 1-26 which was superbly flown for almost three hours and landed well after our land-out in the 103, disassembly, haul-out, re-assembly, and wash down. The first pilot of the Grob came back after an hour of flight, since we were waiting, and described good lift conditions on the back side of the ridge towards the next peak southeast. My passenger and I had watched from the club house as both the Grob and the 1-26 both spiraled up handily on the north end of the ridge. Watching this and hearing about the good conditions east of the ridge gave us a false sense of where the conditions were favorable. In reality, both the Grob and 1-26 had gained several thousand feet southwest of the ridge (windward side), immediately off-tow prior to heading north or east on the ridge (downwind). We only visually observed them gaining altitude on the north end of the ridge. We heard what we wanted to hear and our poor observation skills contributed strength to the idea that the “house thermal” on the north end was where we wanted to be. Bill Tisdale commented on the strength of the increasing southwest and winds and did mention to us to watch our downwind drift – it must have gone in one ear and out the other at the time, but I vividly remember it now.

My passenger and I took off around 1:20 PM to the south and were towed due east toward the ridge line, then south, and then back towards the south end of the airfield, where Bill (our tow pilot) had felt some pretty good thermals on departure. We release halfway between the ridgeline and the south end of the runway at 5300' MSL (2.4K AGL) in a +10 thermal – all signs were that this was going to be a fun ride. We had flown over from Mojave, CA, earlier in the morning in his Bonanza and thought we'd stop in for a quick ride since all I'd been doing was towing. The two of us are both USAF fighter test pilots with close to 10,000 hours between the two of us. This includes probably 3,000 of general aviation time—we'd like to think that we've got a clue! I've flown lots of different aircraft, but I don't have a lot of glider time – a commercial rating, but only 85 tows and 20 hours spread over 10 years. I also realize now that most of my glider time has been in non-productive weather – i.e. I haven't worked much lift, but I also haven't experienced large amounts of sink....anyway, back to the story.

We were just off tow and trying to work the lift on the southwest side of the ridge but we were quickly out of the thermal we released in and didn't reacquire. I decided to head closer toward the ridgeline, where the lift should have been stronger. By this point the winds had picked up (I'm estimating 20 knots from the southwest at 5000' MSL) and we rapidly went north along the ridge. We didn't feel any big “ups” but we gained several hundred feet (up to 5500') as we went down the ridge. I told my front seater that we needed to head back towards the field if we got to 5000'. This at the time seemed adequate and had worked on previous flights at Jean (all calm, winter conditions by the way). The effect of the headwind coming from the direction of the field was obviously lost on me at the moment. We get to a point not quite on the north east side of the ridge (point A on Figure 1, below) and I still feel visually comfortable with the distance to the field (~1.6 nm) and our current altitude (~5200 feet). We actually talked again about the altitude gains experienced at that point over the ground by both the Grob 103 and the 1-26 before us. We looked up to see the 1-26 directly above us and still circling

and appearing to go up. He was at least 2-3 K above us and of course we figured what was good for him would be good for us – bad mistake!

Upon reaching point A and directly below the 1-26, we got what we came for, a +10 on the vario! Again, whether due to poor technique or just being a small thermal, we were unable to stay in it. We made several 270 turns and reacquired the lift each time, but were not gaining any significant altitude. Next thing we see is -10 on the vario and it stays there (point B, figure 1), for a long time, a real long time, in fact it feels like an eternity (but is probably only about 15 seconds) ... bummer. We see 5000' on the altimeter and we begin an immediate turn for the ridgeline to the southwest. When we roll out towards the airfield, pointed at what appears to be the lowest saddle on the north side, we are already at 4500' (point C) and the vario is still pegged down at -10. I have never experienced this magnitude of ground rush before! It was readily apparent that we were not going to clear the saddle had we continued to proceed toward the airfield. The saddle outline was moving up in our field of view relative to our aimpoint – in fighter terms this is call “line-of-sight” rate – in this case it was bad news.

A funny thought came to my mind at this point. I clearly remembered that the best course of action in sink is to increase your airspeed, fly through the sink, and then pick up best glide on the other side. Whoever first proposed this, however, wasn't staring at a massive wall of granite when he said it was the best thing to do --- even if the sink would have fizzled out and the maneuvered successfully worked (very unlikely), my brain would not let me nose over any further (we were doing 60 KIAS at this point, approximately best L/D) – it surely would have been suicide!

Backing up a bit – referencing figure 2, you can see that at point A and/or C we were approximately 0.33 nm from the saddle (I used Google Earth for the distances and altitudes in this discussion). Our heading was pretty much southwest so I estimate our groundspeed to be about 40 KIAS, definitely a factor in sink.

I calculate that the sink was around 2000 ft/min from that position to give us the impression that we were not going to clear the terrain. I used 40 knots ground speed which is 0.667 nm/minute and we had 0.33 nm to go so about a 30 second transit time. Our height at point C was around 4500' MSL, after the turn, and the height of the saddle I got off of Google Earth at around 3500' MSL. So 1000' to lose in 30 seconds equals 2000 ft/min down.

I (we, we're both in this together) rapidly decided that this was not a good way to go and we did another 180 turn, back to the northeast. We're now headed directly toward the lake bed which I (after the fact) calculated to be 1 nm away at the closest point and 1.7 nm to the center. We are still smack dab on top of the ridge at just above 4000' MSL and there is still terrain very close (below us) and we're still seeing the vario pegged at -10. My gut feeling was that we were not going to make the lakebed if the conditions persisted (still seeing our aimpoint going high in the windscreen) and I didn't see any reasonable landing sites between where we were and the nearest edge of the lakebed.

Let's look at the math. At this point we're probably doing closer to 80 knots ground speed, 1.33 nm/min, and we're 1 nm away from a downwind landing on the SW edge of the lakebed. At that ground speed, it would have taken 45 seconds to get to the lakebed. Using 2790' as the elevation of the lakebed, we were approximately 1200-1300' above the surface. If the 2000 ft/min sink, previously calculated, continued in route to the lakebed—we would have used up 1500' in 45 seconds to get there. You can understand why it would appear that we would land short! In this case, however, proper application of sink procedures (flying through at elevated speeds) probably would have resulted in us exiting the sink and making the lakebed. In fact, we only needed the sink to go to 1000 ft/min or less in order to have room to spare. At the time (point D) though I decided to turn to the northwest and what appeared to be a road running roughly north/south, shown on the map at point E—something we could have definitely made.

We get to the road at point E and find out that it's heavily occupied by about 50 campers and multiple ATVs – not a good choice for an off field landing. The good news is that as soon as we turn northwest, the sink goes away and in fact we momentarily catch a +6—+8 up swing on the vario. We are able to climb to about 4000' MSL at point E. In hindsight, I'm probably still within gliding distance of the lakebed, especially since I'm out of the sink, but I'm already headed west and my brain is telling me to head away from the sink – when it becomes apparent that I might just be able to make the Jean airfield.

I'm evaluating our landout options between point E and the airfield, but having never looked at any of the landing sites or obstacles on the north side of the ridge and airfield – I'm shocked to find that nothing looks very landable north of the field. I should have paid better attention on my local area orientation flight(s)!

We maneuver west (looking at the east-west road to the lakebed – not assessed good from the air), then south, and point towards the field. We roll out approximately 1 nm off the north end at around 3300' MSL and at a nice, “normal” glide. Using 20:1 for a realistic glide—we should easily be able to make 20R, the longer powered aircraft runway (need about

300' – we have a little over 400'). That would be predicated on no wind, in our case we've got 10-15 knots of headwind. In this case it looks like our aimpoint is remaining constant on the windshield at a 60 KIAS best glide – that's good.

As we proceed south we begin to realize how unforgiving the environment is, just north of the airfield. There are lots of power lines and towers, a water treatment plant, and a large transportation warehouse sitting smack dab in the way. I get cold feet and decide that if we are just a little short, the results would be disastrous. We quickly evaluate the old Las Vegas highway, which looks great from the air, but in this case has 3 or 4 cars on it where we would be landing. Afterwards, I look at the road and decide it's not a good place to land, even if clear. This is due to berms and posts on both sides that would probably result in wingtip damage and possibly a high speed ground loop. Not good.

I wanted to make the decision early and give myself time to find a spot to land and set up a "normal" approach if possible. The only place I found that looked reasonable was off my right wing between the old highway and I-15. We were able to see one major ditch that ran northwest to southeast across the field, but left plenty of room to the west for landing. At 3100' I make a right turn and set up for landing. Due to the obstacles present and our altitude I elected the downwind approach. We flew the aircraft into ground effect and headed towards our intended spot. My front seater had two really good obstacle calls, a Joshua tree and another large creosote bush, that probably would have caused severe damage to the leading edges of the wings. Once I cleared those, I put the spoilers back out and landed with stick fully aft from a height of about 2 feet. The ground was relatively level and free of obstacles, just a few very small bushes which helped us decelerate rapidly. I barely even applied the brake. I must have slightly dragged the right wingtip near the end because we stopped with the glider headed about 45 degrees right of our final approach course. We kicked up a little dirt, but other than that no real drama. There was one small scratch near the wingtip on the leading edge of the right wing, but other than that just some green weed stains. We were very lucky. I never feared for our safety, but I was definitely bumming about any potential damage to the club's flagship glider. I'm sure we gave the folks on I-15 a show and they must have all called 911, because everyone and their brothers started to show up. Thanks to the club guys – Lex, Jay, et al for the quick response.

We spent the next 2 hours disassembling the glider and hand walking it back to the old Las Vegas highway, where it was loaded one piece at a time on the 2-33 trailer. We rolled the main body out and only had to lift it a few times to get it over some small ditches. Still it wasn't much fun. We re-assembled back at the club and inspected the glider. Finally we gave it a good washing and Jay took it up for a quick test flight. That was a good ending to the story, but what did we learn?

1) ***I was too low over the ridge for the conditions of the day.*** What works on a normal calm day is not acceptable for 20 knots of wind. The wind had two effects. One was the reduction in ground speed towards our objective. This takes away effective glide ratio and makes tackling any sink that much more difficult. Two, the strong winds from the southwest are going to produce strong sink on the northeast side (backside) of the ridge. In fact, the strength of the sink is going to be proportional to the lift on the windward side – in this case a banner day. I should have and would now put another 1000' on top of my turn-around altitudes for those conditions. In this case 6000' MSL to go to the north edge of the ridge, instead of 5000' MSL.

2) ***I allowed the wind to move us too far downwind for the prevailing conditions.*** This is kind of coupled to the statement above but has some merits on its own. The strong winds were taking us away from where we wanted to end up at the completion of the sortie. A pilot needs to make a conscious decision on how far to go in search of lift and in this case it was too far. In fact, like I mentioned above, there was good ridge lift and thermals on the southwest side of the ridge – close to the departure end of the runway. We don't want to make a habit of thermalling off the end of the runway but the windward side of the ridge would have been prudent in this case.

3) ***I allowed other pilots accounts and partial observations of their flights to form incorrect strategies for the conditions.*** This one can definitely bite you. Rather than objectively looking at the geography and the conditions and coming up with our own plan for the flight, we tried to follow what we thought everyone else had done or was doing. It turned out to be the wrong choice! Everyone who gets a glider rating gets the basic training and skills to make fundamental decisions about how to proceed. Use your own brain.

4) ***I probably had a good bailout option and didn't use it.*** I had at least two chances to head to the lakebed, but didn't. I know what I saw at the time (didn't think I would make it) and my feelings about staying out of the sink at the time were strong motivation not to head towards the lakebed. My Monday morning quarterbacking tells me I should have left point D at an increased speed and put the lakebed on the nose, but it was a difficult choice at the time – one that was further strengthened by our exiting the sink as we proceeded towards point E on the map and a point we thought we could land safely.

5) ***I needed a more thorough study and a drive-by of the local approaches, landout spots, and terrain.*** A lot of the flight on the north side of the ridge and the airport was a rapid voyage of discovery (the entire flight from the first indication of

sink to landout was about 3 minutes). Things didn't look the same under pressure to pick a landing spot as they did on normal flights. There might be some places to land on the north side other than the lakebed, but I really wish I would have driven by them on the ground at least once. I'm going to get in a car and go drive them!

6) *We could have used our radio, but didn't.* I felt bad after we landed that everyone was surprised by our landout. We knew it was going to happen about 3 minutes earlier! At the minimum, we should have let ops know that we weren't going to make it back to the field. If we had landing out on the north or northeast side and got hurt, it might have been a while before someone figured it out.

I hope this will be useful to someone other than me. I know I've thought a lot about how the little experience I have in gliders and how I compensate with my other aeronautical knowledge, mostly successfully. In this case I've learned a lot more than I was expecting to when we set out that morning!

Cheers,
Coma

Figure 1: Sequence of Events



Figure 2: Distances and Altitudes



TEN STEPS TO SAFER SOARING*

1. Maintain Personal Proficiency

Although Federal Aviation Regulations are quite specific in describing the minimum amount of recent experience required to act as pilot in command of an aircraft, it is important to make the distinction between being current and being proficient. The adjective current is used to describe a state of being up to date or occurring within a recent period of time. Proficiency, on the other hand, relates to the ability to perform a skill with expert correctness. Being legally current to act as pilot in command does not necessarily imply the level of proficiency needed to do so. Pilots are encouraged to develop a personal proficiency program that allows continuous development of critical flight skills. This is especially important during inactive periods between soaring seasons.

2. Use Checklists Effectively

Checklists are a vital component of the operational safety of our sport. The use of checklists is appropriate in all aspects of soaring, including glider assembly, pre-flight inspection, pre-takeoff and pre-landing, and post-flight disassembly. However, a checklist is only as good as the effort put forth in using it. The most frequent contributing factors in premature terminations of the tow accidents, for example, can be traced directly to improper use of the checklist. Other operational areas that may have serious consequences that result from the lack or improper use of the checklist include glider assembly, pre-flight inspection, and pre-landing. The Soaring Safety Foundation encourages all pilots to not only use checklists, but to use checklists properly.

3. Properly Prepare for Each Flight

Inadequate preflight preparation continues to be one of the most common causes of general aviation accidents. Preflight preparation encompasses a wide range of activities that include glider assembly, pre-flight inspection of the aircraft and related equipment, weight and balance calculations, a review of appropriate meteorological information, and consideration of regulatory issues that are applicable to the airspace through which the flight is planned. Additionally, the pilot's level of proficiency, physical condition, and physiological needs must also be considered. These examples represent only a portion of the tasks required to properly prepare for each flight. Remember, FAR 91.103 states, "Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight."

4. Conduct Positive Control Checks Frequently

Several years ago, a promotion proclaiming the benefits of orange juice appeared on television. The theme of the advertisement was the idea that orange juice wasn't just a breakfast drink anymore. The marketing campaign focused on the concept that the customer would realize the same benefits of the juice regardless of when it was consumed. This same rationalization can be applied to the positive flight control check. It is, of course, necessary to conduct a positive control check after the glider is assembled. However, the integrity of the flight control system can be disrupted in ways other than the assembly process. It is possible that operational damage or malfunction may affect the continuity of the flight controls in a manner that may not be readily apparent during pre-flight inspection or the flight control check conducted before takeoff. A positive control check is always appropriate during the pre-flight inspection of the glider, especially if the pilot has any reason to question the integrity or proper operation of the flight control system. Remember, the positive control check isn't just for post-assembly anymore!

5. Know the Standard American Soaring Signals

In 1993, the Soaring Safety Foundation adopted a new signal designed to warn pilots of the glider's spoilers being inadvertently extended in-flight. In spite of the adoption of this signal, accidents resulting from spoilers being inadvertently opened on takeoff continue to occur. In many cases, either the tow pilot is not aware of the existence of the signal or the pilot of the glider does not understand its meaning. Even if aircraft radios are used as the primary means of communication, it is vital for pilots of both the towing aircraft and the glider to understand the meaning and proper use of the Standard American Soaring Signals. It is equally important for all ground personnel to understand and use proper signals as well.

6. Always Plan for Emergencies

Pilots should always have a plan of action in mind to address potential emergency situations. This is especially true during takeoff, when the pilot has a limited amount of time and altitude available to use in reacting to an emergency. The Soaring Safety Foundation strongly recommends adding an E, for Emergency Plan, to every pre-takeoff checklist. Emergency plans are just as important for other phases of flight as well. Having an emergency plan in mind will allow the pilot to concentrate on the most important of all tasks - flying the glider!

7. Maintain Situational Awareness

In recent years, the frequency of accidents resulting from gliders being landed short of the selected landing area has continued to increase. In fact, land-short accidents have been the most common type of soaring accident recorded during the past two years. Frequently, these accidents occur during the landing approach at the conclusion of a local flight. Common contributing factors cited in land-short accidents are unanticipated sink, higher than expected winds, and misjudgments of altitude on the final approach. Pilots must develop and maintain an awareness of meteorological conditions or other circumstances that may affect the altitude required to safely complete the approach and landing. This awareness will help the pilot recognize and compensate for the effects of abnormal conditions that may be encountered during the landing approach.

8. Use Effective Collision Avoidance Techniques

With the increasing complexity of the national airspace system and the multitude of aircraft types competing for the limited amount of airspace available, effective collision avoidance techniques have become an absolute necessity on every flight. Collision avoidance is an ongoing process that begins before the glider ever leaves the ground. Regardless of whether the pilot intends to make a local or cross-country flight, proper planning is essential in minimizing the potential of a mid-air collision. Pilots should be familiar with proper pattern procedures at non-towered airports, the use of common traffic advisory frequencies and proper scanning techniques and clearing procedures. Additionally, pilots should be knowledgeable of any special requirements for the airspace through which a flight is planned.

9. Eliminate Obstructions in Close Proximity to the Runway

For the past several years, obstructions in close proximity to the runway have resulted in a significant number of accidents, second only to gliders being landed short of the intended landing area. The most common culprits are automobiles and other aircraft parked near the takeoff and landing area. Surprisingly, gliders damaged by hitting obstructions on airports outnumber those reported damaged by obstructions during off-airport landings. The most frustrating aspect of this type of occurrence is that most obstruction related accidents are easily preventable. The key to preventing this type of accident is simple. Keep all parked aircraft and other obstructions well clear of the takeoff and landing area. This can be accomplished by designating a staging area for gliders being readied for takeoff and for aircraft not in use. Other surface vehicles should be parked in an area separate from all aircraft.

10. Make Safety the Primary Goal in all Decision-making

The sport of soaring is unsurpassed in terms of its beauty and serenity. Pilots are attracted to soaring for a number of reasons, most notably the sense of freedom and degree of personal challenge. Soaring provides a level of enjoyment and companionship unmatched by any other form of aviation. However, the personal benefits of our sport diminish very quickly when pilots are injured and gliders are damaged or destroyed. Preventing the most common types of soaring accidents represents a serious challenge to the soaring community. The good news is that challenge creates opportunity. Preventing the most common types of accidents provides us with the unique opportunity to significantly reduce the number of soaring accidents and, in doing so, make the sport much safer for everyone. The benefits of opportunity, however, demand responsibility. Pilots must accept the responsibility to conduct all flight operations with safety as the primary objective. Every decision of every flight should first be considered in terms of how it will influence the safe operation of the flight. Only by making safety the primary goal in all decision-making, will we ever hope to eliminate the most common causes of glider accidents.

*(<http://www.soaringsafety.org/prevention/aps2.htm> from the Soaring Safety Foundation)

LVVSA Tow / FOO Schedule

Updated: 6/2/06

Day	Date	Tow	FOO	Notes
Sat	3 Jun	Felgar	Lacroix	
Sun	4 Jun	Dvorchak	Martens	
Sat	10 Jun	Graham	Wynhoff	
Sun	11 Jun	Colmer	Archer	
Sat	17 Jun	Tisdale	Stave	Monthly Business Meeting - 10am (Moved from 10 Jun)
Sun	18 Jun		Gulewich	
Sat	24 Jun	Felgar	Burns	
Sun	25 Jun	Dvorchak	Martens	
Sat	1 Jul		McDaniel, Robin	
Sun	2 Jul	Graham	Archer	
Sat	8 Jul	Tisdale	Lacroix	Monthly Business Meeting - 10am
Sun	9 Jul	Colmer	Martens	
Sat	15 Jul	Felgar		
Sun	16 Jul		Gulewich	
Sat	22 Jul		Wynhoff	
Sun	23 Jul	Graham	Archer	
Sat	29 Jul	Tisdale	Burns	
Sun	30 Jul	Dvorchak	Martens	

(To volunteer as FOO, Contact Jay)