

2011 US Contest Safety Review

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Disclaimer. This is the safety subcommittee (me) report to the rules committee. It is not approved by and does not represent opinions of the rules committee or the SSA. This report is assembled from second and third hand information, opinion, and rumor. Errors are likely, and corrections are welcome.

It is not an accident investigation. That's the NTSB's job. The purpose of this report is only to summarize information available to the rules committee as of the November meeting, to see what if any lessons this year's reported accidents and incidents may have for how contests could be run more safely.

In particular, do not read my speculation about pilot's motives as either accurate, or as representing the usual desire to blame an accident on pilot errors. I speculate about pilot decisions only to understand where rules or procedures might influence those decisions.

I Summary:

In 2011 we experienced the following significant accidents, incidents, and reports. Fortunately, we had no serious injuries and only one minor injury. This information is compiled from CM contest reports, pilot emails, and responses to the poll and personal observation.

Seniors:

"2 near-misses and an incident (collapsed gear) of returning gliders trying to land over a glider that had just touched down in front of them." (Pilot poll report)

Perry:

Broken tailboom on a landout close to Perry, following a low final glide.
Reports of a low pass interfering with landing traffic (poll).

Chilhowee:

Wire strike on landout, major damage.
Wheel fairing damage on off field landing.
Reports of traffic on the ridge during launch in weak conditions. (poll)

Wurtsboro:

Off field landing. Glider overshoot far end of 2500' field. Wx clear with light winds.

Hobbs:

Near miss report between a glider and Dash 80. (CM report)

Logan:

2 gliders seriously damaged in off field landings.
Thunderstorm day 1, flying near lightning, many landouts.
Additional mass landout days, complaints of "overcall" and flying over unlandable terrain.

Tow – gaggle conflicts.
(The CM report adds a broken tail skid on disassembly and a tow pilot personality issue.)

Uvalde

Tow –gaggle near misses (poll)
First flarm experience for US pilots.

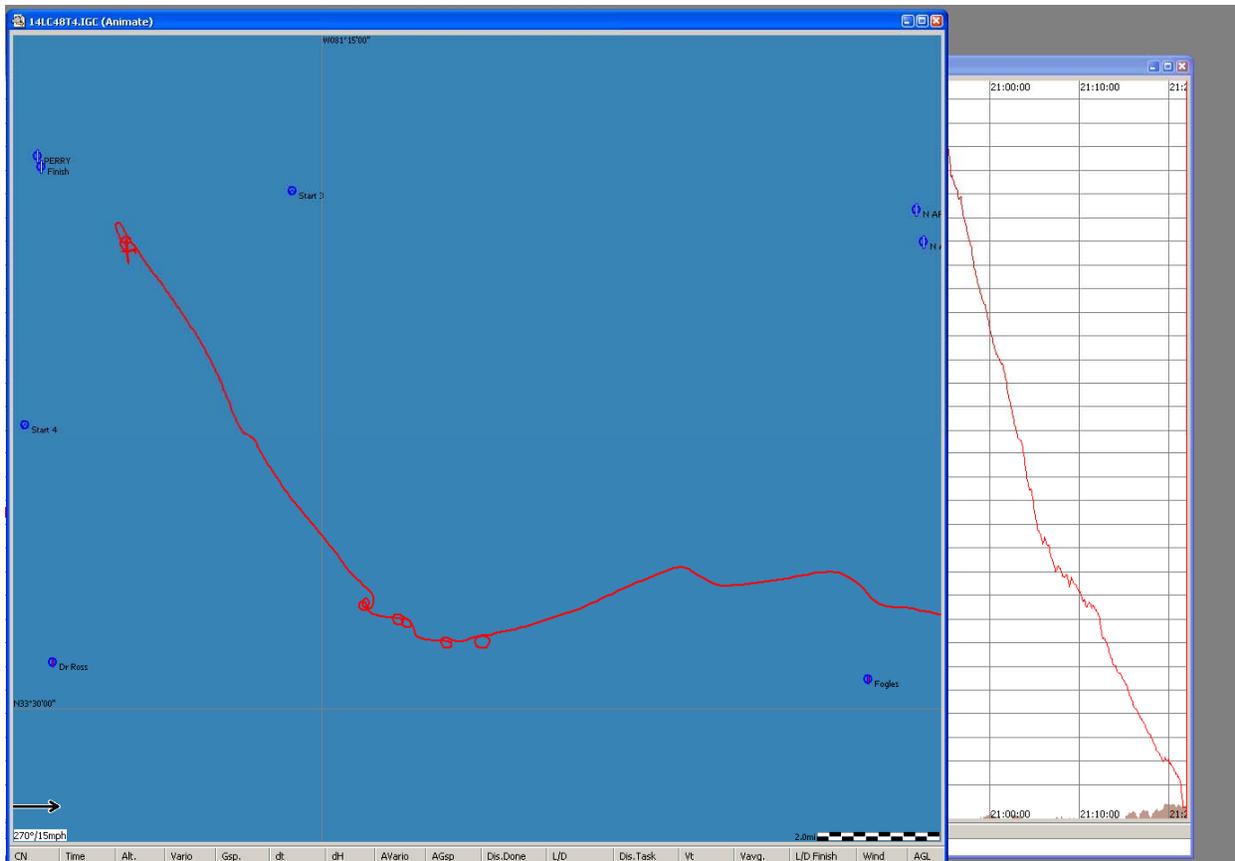
Unknown

Near miss approaching a steering turn. (Hobbs?) Recommends radio call at steering turns. (poll)
“Two contests I was involved with this year had accidents involving gliders striking pedestrians.” (poll) I haven’t had any other reports of these incidents. These are very important.

II Analysis

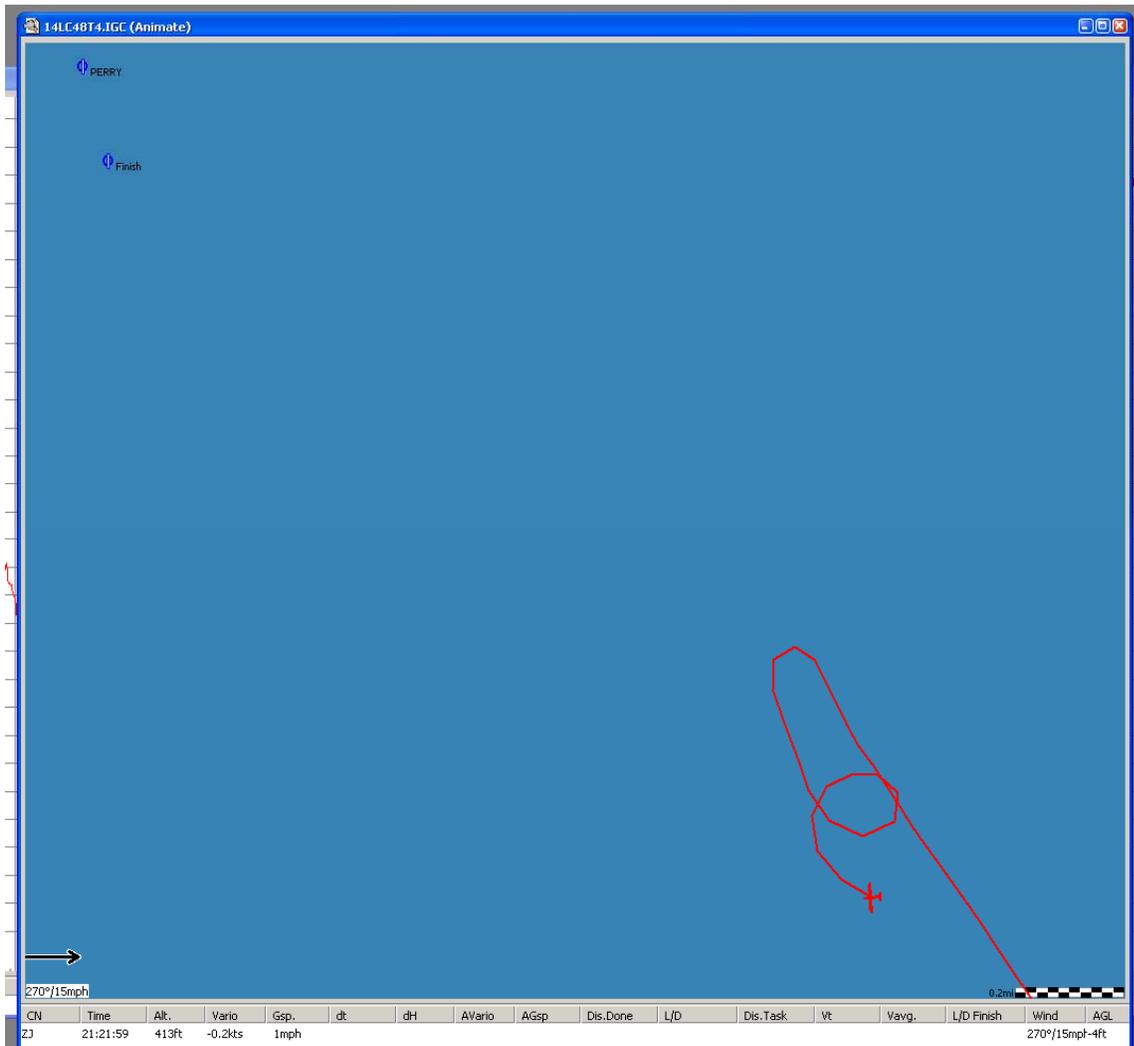
A) Perry

I obtained and analyzed the trace from Perry. His last thermal topped out at 6400 MSL and he headed due west towards Perry. Alas, as often happens (to me at least), he ran in to a river of sink. See you gives his glide to landing as L/D 29 with a 77 mph groundspeed, against a 9 mph w wind.

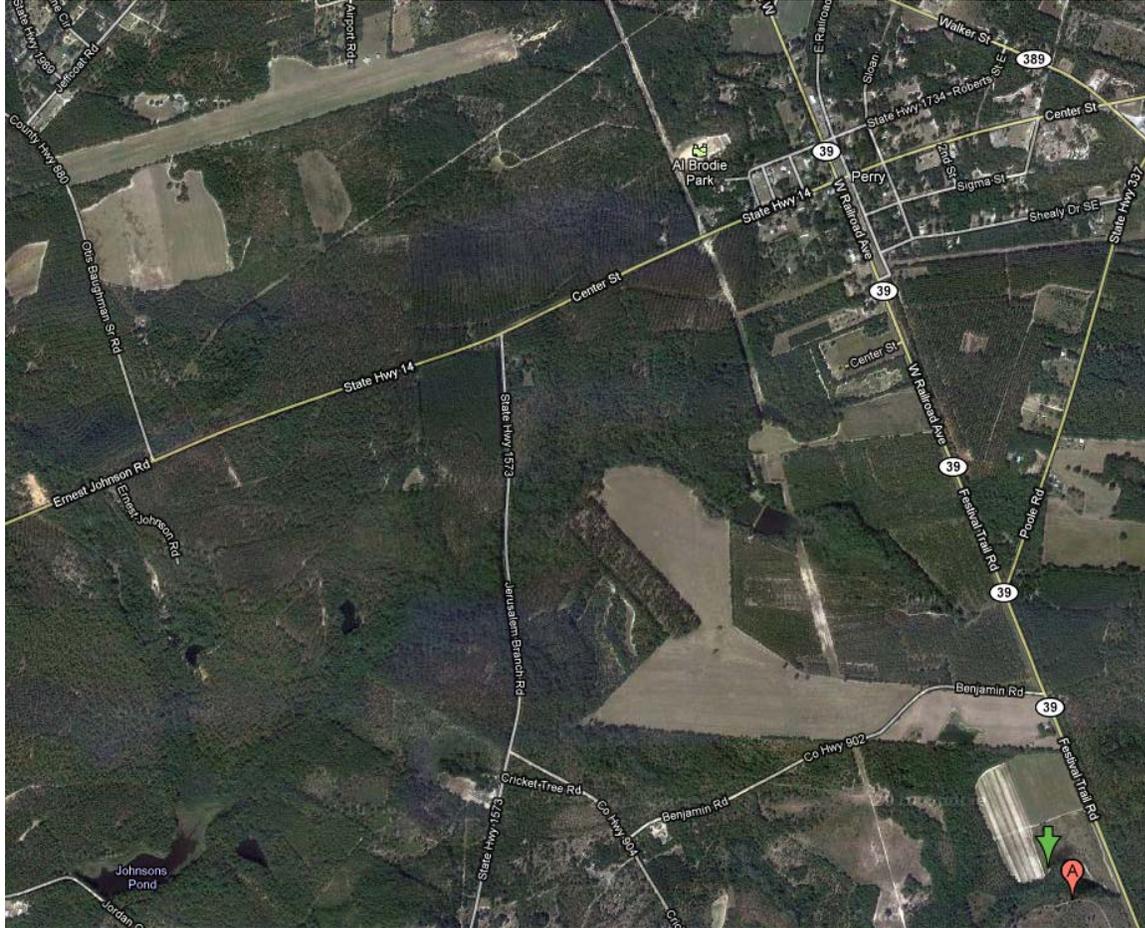


He was heading west, towards Dr. Ross, an airport directly south of Perry. A few miles from Dr. Ross he found some burbles and circled but did not climb. At this point he made the decision to go to Perry heading NW.

His altitude at the last circle is 1500' MSL. He is 5.3 miles from Dr. Ross and 8.8 miles from Perry. $500/7.8=64$ feet per mile to the 1000' MSL finish, so that's hopeless. $1150'/8.8=130$ feet/mile to the ground at Perry is about Mc 0. So he decided to head for home likely with Mc 0 + 0-200 feet over the field showing on the computer. He headed straight for the airport. Alas, he found nothing but more sink.



The pilot overflew the field where he eventually landed. At 758' MSL = 300' AGL he did a 180 degree turn, now heading downwind back to the landing field. He was 1.6 miles from the finish point, and 0.6 miles from the finish circle. He did a 360, starting at 669' MSL = 200' AGL and then landed downwind in a 15 mph wind, ending in a groundloop which broke the tail boom.



Correlating the trace with satellite photos, this is the last group of fields before solid trees until one reaches the runway at Perry. The landing field is shown with the green arrow. The choice of downwind landing into this small field is a bit puzzling. There is a large attractive field heading NW, in to the wind, but it has a power line across it. (You can see the cut through the trees). The triangular shaped field closer to Perry is also attractive. Either the ground condition and crop or the powerline must have made these fields unsuitable.

On analysis, this is not an everyday groundloop, but a very serious crash narrowly averted. The scenario of this accident is eerily reminiscent of a similar and fatal crash at Hobbs in the late 1990s. Both we and the pilot are fortunate at his skill in not stalling and spinning the glider during the last low-level maneuvers.

Obviously, there were numerous chances to avoid this crash, by committing to climbing or landing in a good field earlier. Had the pilot committed to landing only a minute or so earlier, landing upwind in the chosen field, he likely would have averted the groundloop, and more importantly the low-altitude maneuvering that preceded it.

It is too easy to dismiss this accident as pilot error and move on. This is a good, well regarded pilot. We have had many similar crashes over the years. We need to ask why a good careful pilot was so tempted to put off a landing decision for so long.

“Get home itis” is common even away from glider races. Still, it may have been on the pilot’s mind that if he could only make the final 0.6 miles to the finish circle he could receive speed points with a minor low finish penalty.

B) Chilhowee

The glider “hit a residential power line on final approach to a cut hayfield about 20 miles northwest of Chilhowee.” It “came to rest in the field with a broken canopy and a circumferential crack in the rear fuselage. “ The pilot was not injured. The FAA and NTSB found that the pilot’s “ paperwork was impeccable, and the interview went well.” We can rest assured our government is making sure nobody crashes from inferior paperwork.

I obtained the trace from the SSA website to see what lessons it contains, and I matched it to Google earth pictures of the field from the air and ground.

I don’t see any lessons or recommendations to come out of this incident. The pilot did a good textbook job; he diverted to landable terrain, he circled while checking out fields, he did a proper pattern with adequate speed, etc. Yes, one could apply 20/20 hindsight, but not productively. We all need to look harder for wires! Most of all, I see no lessons for rules in the flight analysis.

The CD added, generously, “A contributing factor to the wire strike incident was my decision to send the fleet out on a poor soaring day.” Several poll comments also complain about weak weather. Some excerpts from the ssa website report describe conditions on this day and a pilot’s view of the decision to attempt the task:

..a cirrus shelf started to make its appearance over the western horizon as the 10:00 morning meeting progressed.

By grid time the leading edge of the cirrus had already arrived, and more was coming in from the west. ... sniffer... was launched and actually got to about 3500msl. ...CD ...launched the entire fleet of 22 gliders. The task was a 3hr TAT with the first turn to the north, followed by a steering turn 20 miles or so to the west (underneath the now dark shelf), then a big circle 30 miles south or so. After the launch was finished, the CD did a roll call and reduced the minimum time from 3hrs to 2hrs....

We all struggled to find climbs, and about 3500-4000msl was the best that anyone was seeing. ...CD ...opened the gate, followed immediately by a rush of gliders going out the gate -- and then coming back for restarts when they couldn't find anything out on course.

Eventually most of us limped out on course, climbing in anything that wasn't actively going down, and trying to figure out where we were going to land. At least 6 gliders found a home at McMinn airport, and 'day winner' Sean Franke (HA) made it all the way to Mark Anton (the

middle of the second turn area). Nobody made min distance, so the entire effort was for naught.

Historically, most of our landout damage does come on weak weather days, so attention to the decision to call a task on such a day is warranted. The pilot poll also contained a certain amount of discussion of this day and flying on weak days in general. Decisions like these are very hard on CDs.

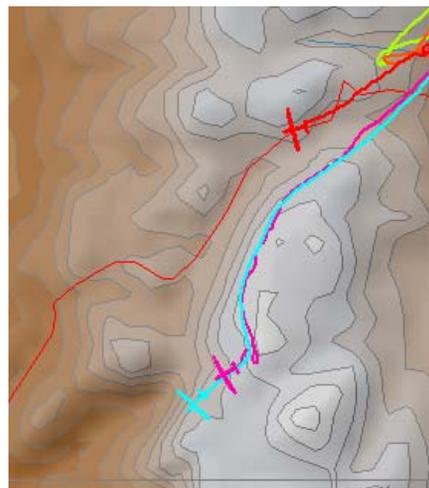
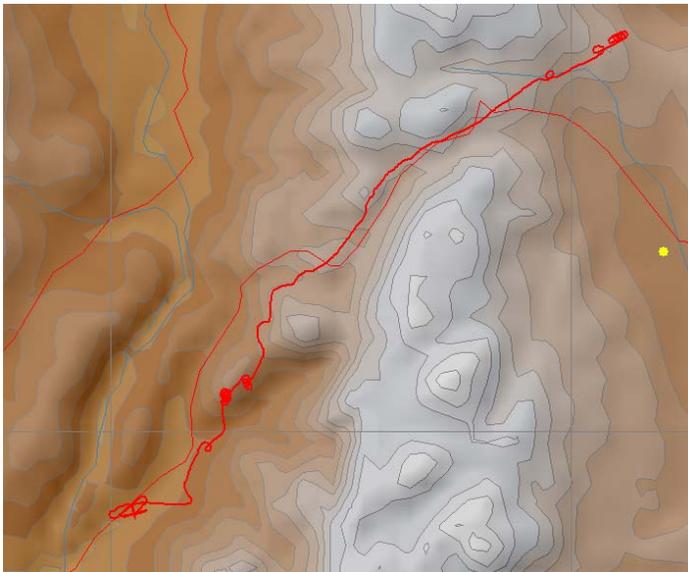
I see no simple rule or written guidance that could have helped this CD make a tough decision in this case. Height criteria to launch and open the gate were followed. The important guidance to task over friendly terrain in weak weather was followed. One might question the steering turn to the West, under the cirrus, as the ssa report did. However, it is also wise (and part of our “critical safety checklist”) not to allow pilots the option to fly over unlandable terrain in weak weather. Without the steering turn, it would have been tempting for pilots to head out over the sunny but completely unlandable high ground to the East. Last, flying into deteriorating conditions such as under cirrus allows pilots lots of time to make decisions.

C) Wurtsboro.

I talked at length with UH who analyzed the incident. Though its outcome was the worst of the season, I see no lessons for rules or procedures in this incident. Contest briefing materials and safety talks cover the mechanics of off field landings in great detail.

D) Logan

Logan had two badly broken gliders. Several other issues sparked controversy, including one day of flying in thunderstorms, a few mass-landout days, and the climbout phase which required scratching over foothills and many relights. Rumors of additional crashes are specifically contradicted by the contest organizers. (Interested pilots may want to consult my [soaring café blog post](#) for more views of terrain, tasking, etc. that are not related to rules.)



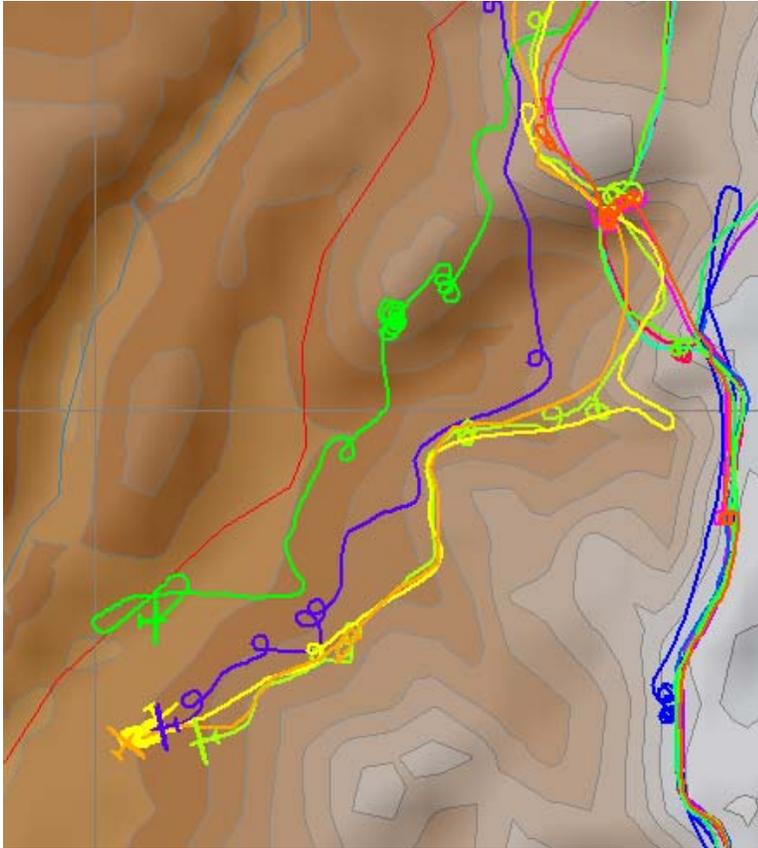
Crash #1 (Day 2): I talked at length to one pilot who broke a tail boom, and analyzed the trace, shown above. He was returning from the East through the gap at Mink Creek, trying to contact the ridge which would take him home to the south. He was the third one through the pass. XG and KS had passed through just before, showing the likely intended path (right picture).

He left Meade Peak, across the valley from the East, (not shown) at 9590'. He glided back across the valley well, losing only 1000', but not leaving enough to make it over the pass. He gained 1000' in a 2 knot thermal, reaching 9321'. He took two more turns on the way, showing a sensible desire for more altitude. Going through the pass, he showed 8300.' The pass is 8200' on the google terrain, indicating it was close. However, absolute altitudes are not well measured and the pilot states that he did not feel at all close going through the pass. The ridge he's aiming for on the south here is about 8000'. He states that he did not feel comfortable crossing over to the ridge, as he would have arrived below the top, and was also concerned about downwash in the 10 mph south wind. As for the rest, we can all sympathize with as what it feels like to get flushed out of the hills.

Flying out towards the big valley, he stopped at a barley field, examined it well from about 1000', and landed after doing a pattern. Alas, the barley was about 2 feet high. He caught a wingtip which caused the groundloop. (The CM report also mentions hidden rocks, but the pilot says there were none, the field being cultivated. The pilot did report hidden irrigation pipes, but he spotted and avoided them.)



The google map shows many reasonable fields in the area. The street view above shows this one as a very nice field, if only it didn't have crop in it. It turns out there were better fields a few miles further down the valley, but it's hard to fault a pilot for not pressing on too low towards an area he can't see.

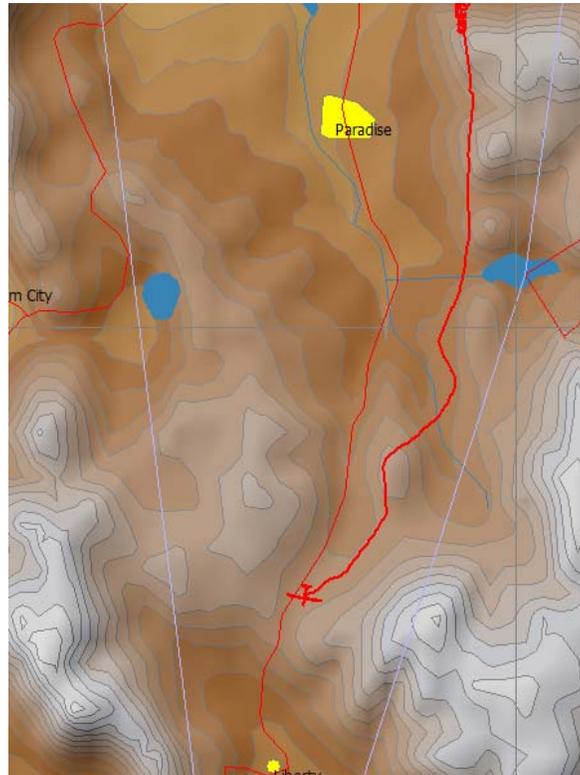
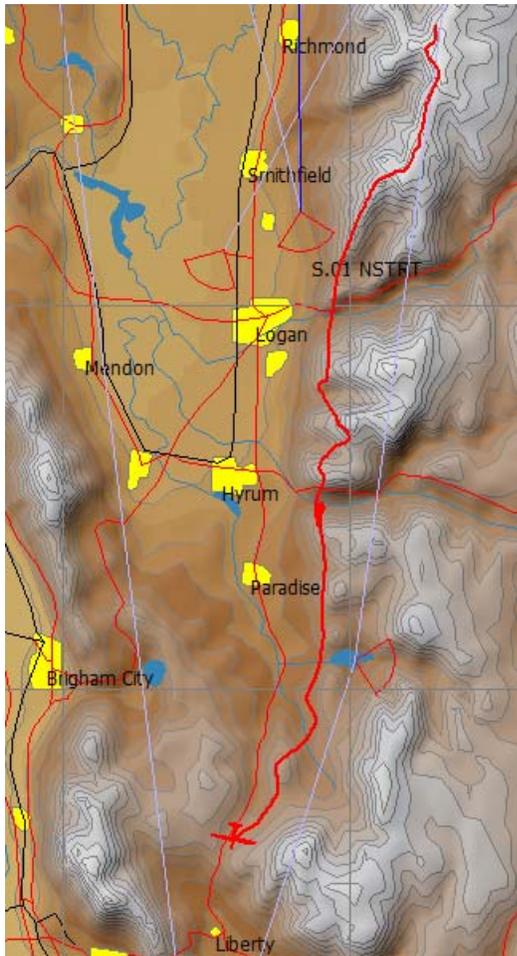


About half the fleet followed the same route about 10 minutes later, many also squeaking through the pass without altitude to contact the ridge, and then getting low or lower over the foothills. They eventually scraped out. The picture shows a gaggle that followed the same path and thermaled out within view of the field. If one wants to fault this pilot's decision-making one has to fault that of at least half the fleet. (Not everyone did this however. 7V turned around twice just shy of the pass, despite having more altitude than many, and eventually landed on the East side. Others chose the somewhat slower Northern route home.) In fact, this pilot escaped the "bowl" below Mink Creek by leaving the high ground a good deal earlier than necessary, and stated there were intervening ridges which might have trapped him had he waited longer. In the event, he cleared those ridges by about 500'

The Mink creek turnpoint is a well-known difficult spot. It marks the north end of the ridge leading south back to Logan. Tim Taylor's excellent local area briefing covered the route from Meade peak, through the pass, and connecting to the anabatic lift on the ridge as a standard way home from the East. He also briefed us on the well-known dangers: Squeaking through the shallow pass too low, the long glide out to any landing fields on the West side, the intervening ridges blocking the glide out, and that ridge/anabatic lift is poor much below ridge top height. He pointed out the alternative route around the North end of the range. The rules issue, discussed below, is whether we can do something to alleviate strong temptations around such a well-known trouble spot, beyond emphasizing tasking to avoid such temptations.

Crash #2: (Day 1) The CM report states "Pilot was seen running the ridge, at a low altitude. Pilot bypassed several suitable landing sites. Pilot landed on top of the rocky ridge, tilted on the edge of the

mountain.” A separate report states “.. flew past many good fields and continued into high ground that was unlandable without turning around. My guess is he thought he could clear the ridge in front of him...”



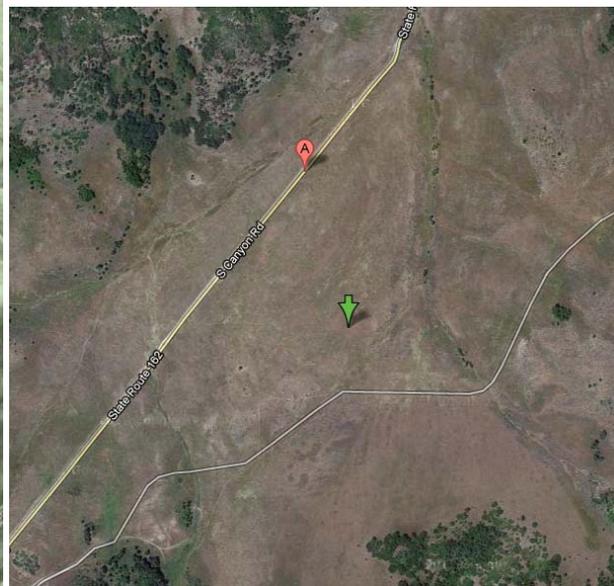
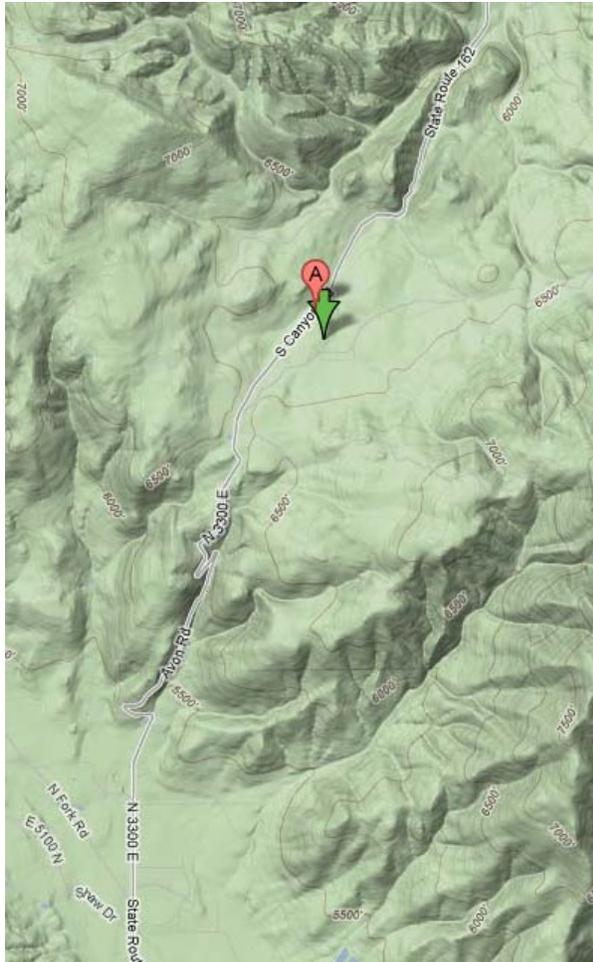
The task led to 15 mile turn area centered on mt Ogden, south of Logan, and then return north of Logan. The pilot, shown on the left, has just entered this turn area.

The left picture shows the big view. From the top of the ridge abeam Richmond, the pilot is gradually reduced to flying the foothills in front of the ridges. The wind is 190 at 9 mph, so the ridges and foothills really did not work once out of the anabatic layer right on the ridgeline north of Logan. (I and many others discovered this rude surprise on our way back.) You can see a last thermal which goes to 9000' East of Hyrum. Then the pilot flies straight to a landing, achieving an LD of 33 along the way, i.e. finding no lift and likely sink.

I retraced the path on Google Earth. There is absolutely nowhere to land on this path once past the valley just south of Paradise, roughly even with the lake shown with a photo sector.

The glider came to rest 14.3 miles from the Mt Ogden turnpoint, i.e. 0.7 miles inside the turn area. About one mile further ahead the ground drops off steeply, to a south-facing ridge that looks very good

for producing thermals, and to the valley around Liberty which has landing fields. Putting it all together, it seems the pilot's plan was not to nick the turnpoint and return to Paradise, which was unreachable at that point, but to make it over the pass into the Liberty valley. He ran into the ground before he got there.



The terrain around the landing site (right) is unimproved mountain meadow. There are a few roads, and it is curious that the pilot did not attempt to land on one of them or maneuver much at all before landing, but he must have seen things that Google earth does not see.

I regard this as a noteworthy accident, because like the final glide accident at Perry, it could have been much worse. The pilot really had no way out, and is lucky there was a meadow when he ran into the ground. Thinking hard about why a normally cautious pilot would choose this path is worthwhile.

Thunderstorm: Day 1 had a thunderstorm blow up on course at the north end of the task. Many pilots were washed out of the air. Many others reported flying near lightning or other scary incidents.

“Overcalls:” Several other days saw mass landouts. In these cases the weather was benign but weak. All tasks were TAT or MAT, so pilots had the option to return early, but chose not to do so.

“Unlandable terrain:” As often in mountain sites, several task legs crossed unlandable areas. There was really no surprise about this, and options to go around, turn back to gain altitude, etc. were always present, though these of course take time. However, many pilots chose to fly at quite low altitudes over the poor terrain, and many other pilots apparently felt competitive pressure to follow them.

Climbout: The initial climb at Logan requires flying close to the hill, in gaggles. The towplanes like to ridge soar on tow, putting them through the gaggles. There was a lot of comment, but no incidents.

III Recommendations and suggestions

Disclaimer reminder: These are my opinions only, and not rules committee decisions. The safety nag’s job is to make safety suggestions without regard to costs other considerations. Everyone else’s job is to decide whether the improvements in safety are worth other costs.

Broken gliders

It’s clear that pilots are pushing on, still racing at far too low altitudes, both on course and on final glide, over unlandable terrain, and choosing to fly in thunderstorms or hopelessly weak weather rather than abandon the task.

As one poll comment put it well, “Too many pilots making bad choices prior to off-fields this year. Was not the contest fault but why are these pilots flying into unlandable terrain low?”

Well, maybe because we give them lots of points for doing it. We cannot micromanage pilots safety decisions, but we can help on the margins by removing the remaining big point rewards for clearly unsafe decisions.

- 1) We should increase the penalty for very low finishes. A pilot such as the one at Perry should know that he will get almost the same points from landing in a field 1 mile out as he would for squeaking 10 feet over the trees and plopping it on the runway. Landing in the last field or trying to get home will be a hard enough decision without the extra temptation of several hundred contest points.

[At the November meeting, the RC agreed to this suggestion. Finishes under 200 feet below Minimum Finish Height will still receive only the current gentle penalty. Finishes more than 200 feet below Minimum Finish Height will receive distance points only.]

- 2) We should allow and encourage contest organizers to set up minimum altitudes over well-known trouble spots, passes, or tempting unlandable terrain. These would be included in the SUA file, and falling below the minimum altitude triggers a substantial penalty.

Both crashes at Logan involved skimming over passes quite low (or trying to), and previous crashes at Mifflin have involved the same issue. Specific well-traveled and tricky passes are good places for a minimum altitude.

At Logan, the area around Mink Creek might benefit from such an SUA. This would discourage low scratching out of range of landing options, as well as crossing the pass from the east with insufficient margin. The swath of unlandable terrain to the northeast on the way to the Salt River valley, and to the east of Meade Peak are additional good candidates. At Mifflin, the sites of Peter Masak's and Bruce Conrad's crashes might benefit from minimum altitudes. Another example might be the Blue mountain (last mountain to the SE in Tuscaora) where there was a big controversy in 2007 over traces showing pilots ridge soaring despite wave suppression and zero landing options. Parowan has some obvious areas too that could benefit from altitude minimums.

Though the Top Gun school's "hard deck" concept has been unpopular with glider pilots, perhaps a hard deck over specific difficult terrain will be more acceptable, as a way of enforcing "I promise not to squeak through the pass if you won't do it either."

The rules currently state that airspace above any SUA is automatically restricted. The only rule change needed is to remove this provision, so that CDs may declare restricted airspace with an upper bound. Nothing in the rules forbids the CD to declare airspace off limits. The "encouragement" part takes more work.

[This proposal was discussed at length at the November RC meeting. The decision is not to change the rules, but that a CD who wants this may ask by waiver. The Safety Nag needs to convince some CDs to try it, and promote enthusiasm for the idea among pilots.]

- 3) Safety talks need to stress the difficult decisions to be made on marginal final glides, and taking decisions to abandon the task earlier. Mountain site safety talks need to emphasize that large diversions to landable terrain and turning around to try a transition over again are routine and accepted parts of mountain flying.

[In other discussions, RC decided to assemble a list of important safety talk items, and these will be included.]

Weak weather, thunderstorms

The Logan thunderstorm, "overcalls," and the Chilhowee no contest day were not foreseeable at the time of task opening. Many contest days have turned out fine that looked the same.

"If you think you are doing something dangerous, just land" is not satisfying to our pilots, because they clearly don't relish throwing away an entire nationals, especially on the first day, knowing some other less risk-averse pilot will take the chance and could win the contest. Satisfying or not, 40 years of this advice has had insufficient effect.

One straightforward recommendation is

- 4) Implement worst-day scoring adjustment

The worst-day adjustment will make it far easier for individual pilots to abandon the task in dangerous or hopeless conditions. This will have the positive benefit that everyone is more likely to do so, and if all choose to take this as their “worst day,” it becomes the worst day for nobody. It’s a way to implement the “mutiny rule” suggested on the poll, without the difficult strategic implications such a rule would imply.

We had hoped that regionals would try worst-day adjustment and then pilots would grow to see its advantages. This hasn’t happened, perhaps because regional CDs are confused enough about the existing rules and have enough to do already.

Since we have analyzed it probably a good deal better than many other rule changes, we could just implement it directly, first in regionals and then in nationals. Like any scoring formula change, it will take an adjustment, debugging, and explanation period.

[This recommendation was discussed extensively at the November RC meeting. We rehashed well understood arguments for and against the worst-day adjustment rule. Pro: It encourages pilots to give up and land in dangerous weather. It encourages pilots with a poor day early in the contest to keep going and not leave, as several pilots did at Logan after discouraging early landouts. Con: It may encourage excess risk taking late in the contest among pilots who haven’t used up their worst day, and it complicates both the presentation and strategy of scoring.]

Result: Leave worst-day scoring as an option by waiver, and encourage CDs to try it and pilots to ask for it. Pilots need to try it, understand it, and we need to experience a few days with poor weather and worst-day adjustment to see if it does lead to the desired result, before imposing it on all regionals. We are also going to put together a document listing all the current waiver and rules options and encourage CDs and CMs to think about options more systematically.]

If pilots don’t like the ways days like this turn out, and if they are (perhaps understandably) not willing to address safety temptations by being willing to throw away a contest and land, really the only other option is to

5) Reopen our discussion of the tradition that tasks are never called off after they are opened.

This can happen in three ways

- a. The CD can use his current authority to decide the day is not “safe” or “fair” and cancel the day.
- b. Rules can clarify that the CD does have this right. Many CDs believe there is a rule against canceling or fear a wave of protests if they exercise their right.
- c. Pilots can protest the results after the fact under “fair” and “safe” clauses.
- d. As suggested on the poll, there could be a “mutiny’ rule.

Several comments to the poll support the general idea, and comments in previous years (following Waynesville safety finish in particular) did too.

“See my letter of 8/2/11 to the rules committee concerning flying in thunder storms and other poor tasking at Logan. As I noted in that letter, I think we need a rules change to mandate review of contest days where unforecast weather makes the day’s outcome a matter of luck.

Such a rule would also have positive safety effects by discouraging pilots to press on in spite of dangerous weather. ..”

“There should be a 'mutiny' rule allowing the contestants who are experiencing the actual conditions and may disagree with the CD and advisors to overrule the CD's decision.”

The rules committee has deliberated this question extensively in the past. As in our previous discussion, this is not an easy option for lots of reasons. More internal discussion is unlikely to be productive at this point. Really, at this point the action item is for the pilot community to discuss this tradition and decide if the pros outweigh the substantial cons. Pilots: if you want something like this, you have to convince your peers and tell us. At most, the RC might add this to the poll for next year.

[Result: Since the RC has discussed this extensively before, no action taken now.]

Minor operational issues

The “low pass” at Perry and landing snafus at Seniors and other contests remind us that contests need constant attention to landing patterns and procedures, runway clearance expectations, and so on. A clear statement whether “show finishes” are allowed, and if so where and how they take place, is a good idea for CDs to keep in mind.

The unconfirmed report of running in to pedestrians is especially troubling. While any injury is bad, injury to non-pilots has the potential for severe consequences to the sport.

At every single contest we seem to need to remind people that they cannot land right in the middle of the runway and then go to find their car; and we seem to need to remind people that there is more to the runway than the 100 most convenient feet.

Though we received these comments, no protests were filed. I do not know if the pilots even told the CD about the problems, or used the safety box. With all these mechanisms and the right to issue unsafe flying penalties in place, I see no real recommendations to offer. Pilots: if you see something you don't like, speak up! (Politely, please.)

The idea of making a radio call at a small-diameter steering turn has potential, though adding radio chatter while other gliders are also finishing is a potential downside. It does not need to be enshrined in rules, as steering turns (MAT) and finish lines are rare. CD can simply request such calls if the situation demands it. Pilots are always welcome to make safety calls on 123.3. Similarly, keeping towplanes away from gaggles and vice versa seems like a straightforward issue.

Only a small number of contests turned in reports. Keeping track of our safety incidents is important. SSA needs to nag CMs to turn in reports on time, and we actually do read them. We also need to make sure pilots involved in incidents turn in traces and debrief their crashes with CM, as per the rules, despite the obvious embarrassment they feel at such moments.

I thank the CDs who turned in reports, and in particular Rick Sheppe for his very detailed and thoughtful reports. I thank all the pilots who added comments reports and suggestions on the poll or by email.