Chain Bridge District
Fall Camporee 2009
"LOST! [IN THE GRID]"
(GPS, UTM Grid Coordinates & Orienteering)

After Action Report

23-25 October 2009

Camp Highroad Aldie Virginia

Open to All Registered Boy Scouts, Venturers, Varsity Scouts and Adult Leaders of Chain Bridge and Adjoining Districts

Email: chainbridgelost@verizon.net

Web: www.scoutgps.org

(After Action Version 9.0 – Close to Final)

Chain Bridge District LOST! Fall Camporee
Friday-Sunday 23-25 October 2009
AFTER ACTION REPORT

Executive Summary

The basic theme of this camporee was to overlay land navigation skills and a distributed treasure hunt including geocaching onto other fun skill activities. We were reprising a successful Camporee our district put on in 2001 in the same location with grid-based land navigation technology. The main objectives were: (a) build patrol teamwork, (b) introduce and train on elementary modern land navigation skills (including GPS and grid coordinates), and (c) have a lot of fun.

The Camporee program was compelling. Imagine a treasure hunt with candy prizes and puzzle pieces stashed in caches all over a summer camp with blazed and marked hiking trails through the woods. And activities such as BB Rifle, slingshot paintball, pioneering, COPE challenge, map terrain features, and bear bag hanging! Plus an ingenious and fun SCORE-O orienteering competition on Sunday morning! And a terrific campfire!

The Camporee was successful overall in accomplishing each of its objectives. However, despite the involvement of land navigation experts in the camporee planning process, the organizers underestimated the amount of additional training some scouts would require in order to successfully locate targets using grids and grid coordinates. The BSA is catching up but perhaps has not done a great job in the past keeping us all up to date with modern land navigation technology. Rather, the BSA has only recently has begun to incorporate GPS and grid coordinates into advancement and training regimens and protocols. These grid-based concepts are not difficult to learn, but they are complex enough to require training and practice before one can be proficient. Most of our participants were inexperienced with basic grid-based land navigation technology, and it was unrealistic for us to expect to be able to teach them in a single weekend.

By leading the charge, our district suffered some “casualties” in the form of discouraged Scouts. Despite onsite training on Friday evening, it became apparent during our Saturday morning program how little some Scouts understood grids and grid-based technology. We anticipated that some Scouts would have difficulty using their GPS due to user interface problems, but *what we did not anticipate or predict beforehand was that many simply “would not get” grid coordinates*. Any training on this topic should probably start with the basics of what the UTM grid is, what grid coordinates are, how to plot grid coordinates

on a gridded topo map, and how to determine the grid coordinates of a feature on the map. You can have used topographic maps with compasses for years and yet never have been exposed to what grid coordinates are and what they can do for you. Grid-based mapping technology isn't even new – the USGS has been printing UTM grid "tick marks" on its North American topo maps for decades. But it is only now, with the availability of inexpensive, rugged, reliable GPS units that directly indicate position in UTM grid coordinates with a very high degree of accuracy, that use of grid technology to specify position has become compelling to backcountry outdoorsmen.

> The basic skills surrounding grids and grid coordinates are not difficult to understand but they are *essential to successfully using a GPS as a land navigation tool*.

As a result of our experience, we have put together a detailed training guide and an associated website (www.scoutgps.org) as a training resource Scout Troops and Scout Districts.

We heartily thank the Troops who participated in leading the charge! We all collectively learned some great lessons about preparedness and leadership as well as bootstrapping our land navigation skills into the 21st century. We learned for example that a GPS unit is less than useless if you don't know how to use it. We learned that map grids and UTM grid coordinates are simple and extremely useful once you have used them once or twice but can be very confusing if you have never used them before. We saw that younger patrols can become easily frustrated in the rain, and that trying to teach Scouts math when all they want to do is get on the trail is an uphill battle. We were reminded of the tremendous power of Scout Spirit, and the grace with which adult leadership can step into the breach and accomplish almost anything they set their minds to. And we also were reminded what a wonderful experience it is for a Scout to serve as Patrol Leader, leading a team in the backcountry.

Our camporee program in a nutshell:

►A Friday night training session taught the necessary basic land navigation skills so the Scouts could succeed.

►Saturday's program required patrols to locate and navigate to six (6) activity stations (Rifle Range, Slingshots, Pioneering, Map & Terrain Awareness, Bear Bag and COPE Challenge/obstacle course) in sequence. Four of the six activity stations were located very close to the main camp and were easy to find without using any land navigation tools at all, just by walking up and down the main road to/from/within camp. The COPE activity station was a mile away from the starting point along established trails, and the map/terrain awareness station was

about 0.5 miles away along an established road through the fields. The layout was similar to a land navigation Camporee the district conducted in Fall 2001. All objectives could have been located by simply hiking the camp trails.

►We issued each patrol a passport listing the UTM geographical coordinates of the activity stations. We used a shotgun start wherein different patrols were required to start at different activity stations to prevent overloading of nearby stations (and thus avoid unduly long wait times). In other words, there were six different versions of the passports, each containing the same information in the same order but starting from a different start point. The patrols were directed to go to the first location listed on their card first, and they were told that they would be turned away if they visited the stations out of sequence. This put a lot of pressure on the patrols not to just find the activity stations, but to find them in order.

►The patrols were asked to navigate to the activity stations using a gridded topographic map, a 1:24000 grid overlay and a compass. The gridded map was prepared by downloading the Lincoln Va quadrangle topographic map from USGS, creating a map containing only the relevant portions of the map covering the camp, and using Adobe Acrobat to insert grids and the first numbers of the grid coordinates (see attached). Instructions printed on the map directed the scouts to:

1. Read UTM Grids from Passport
2. Transfer UTM Grid to Map
3. Program Way Points into GPS
4. Navigate to a Point
5. Follow a heading, correct for declination

►The grid lines reflected grid north (which is true north to within a small margin of error). Other pertinent information from the map's original legend were included in the version of the map issued to the patrols. Care was taken to ensure that the map would remain at its original 1:24000 scale so that grid overlays (and compass baseplate 1 mm scales) would be accurate.

►In addition to the gridded topo map, each patrol was also given a satellite image (aerial view) of the camp area with trail markings, and a sheet protector to keep their map and image dry in wet weather.

►Saturday's program introduced the GPS as a land navigation tool supplementing map and compass. GPS was intended to be used as a *secondary* tool for navigating to activity stations (i.e., the Scouts would have map and compass and a GPS -- two *independent* tools for aiding them in finding their objectives). Each patrol used GPS as a primary tool for geocache locating (see below). However, as explained below, many Scouts tried to use the GPS as their sole land navigation tool, sometimes with unsuccessful results (especially if they had not read the GPS manual or used the device previously).

►Six (6) geocaches (ammo boxes) were deployed on the course. Most geocaches were either in plain view and/or marked with orange flag tape to make them easier to find. Four of the geocaches were placed immediately adjacent a trail or road, one was placed near a pond, and one was placed on the top of a hill. The Scouts were given UTM grid coordinates for all six geocaches. The scouts could have located these by plotting the UTM grid coordinates on the map and using only map and compass, or they could have programmed the coordinates into their GPS units as waypoints and used their GPS units to "geocache", or they could have used both techniques.

►The geocaches contained candy (one bag for each patrol) and numbered jigsaw puzzle pieces (each patrol had a different, inexpensive jigsaw puzzle with its pieces distributed throughout the course). Each activity station also issued each patrol a puzzle piece. The patrol's overall mission: complete the puzzle (i.e., a campwide distributed treasure hunt).

►A Saturday night campfire opened by an O/A ceremony featured skits from participating Troops and staff contributions.

►A Sunday morning SCORE-O orienteering meet involved land feature identification and very basic compass skills. Targets were placed over a wide area. Scouts were given a detailed satellite image with trails, roads and targets marked. The Scouts were to locate the targets and note the codes found on each one. The exercise placed value on a patrol leader organizing his patrol in advance into teams of two and dispatching them to cover different sections of a wide area. Each patrol was scored based on their logged results.

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Overall Evaluation:

The overall land navigation concept of the Camporee is a sound concept worth repeating – but with some important modifications. First the positives:

►The basic land navigation theme was engaging and exciting. The Patrols were excited to learn about GPS technology and enjoyed the opportunity to get off on their own in the backcountry.

►The "distributed treasure hunt" model of Saturday's activities was sound.

►The patrol method thrived at the Fall Camporee. Patrol leaders were generally in good charge of their patrols and learned a lot about outdoor leadership skills.

►Saturday's activity stations were uniformly praised as lots of fun. Activity Station staffing was excellent and creative.

►The camporee was successful in raising unit awareness, competence and experience with modern land navigation skills.

►The camporee introduced many people to grid-based land navigation technology which is the way of the future and an incredibly useful tool that can and will save lives.

►Those patrols who understood the concept of UTM geographical coordinates and the basics of how to operate their GPS unit (i.e., program and follow a waypoint) succeeded.

►Sunday's SCORE-O orienteering meet was a huge success; just about everyone who participated had a great time (helped because the weather was beautiful).

►The campfire was a blast.

►Logistics were good.

►Site was spectacular.

►Weather on Friday/Saturday was marginal, spectacular on Sunday.

Now a candid evaluation of Saturday's challenging (too ambitious, it turned out) land nav program. The land navigation skills Saturday's program required to locate activity stations and geocaches were too challenging for many of the younger patrols to learn in a single weekend. This was because:

►Many Camporee participants did not understand the concept of UTM map grids and grid coordinates that are the current basis for most modern land navigation tasks. Frankly speaking, the BSA has not done a good job in the past through advancement and otherwise at keeping our Scouts abreast of modern land navigation technology. While this is already changing with the 2009 Boy Scout Handbook and a planned Geocaching merit badge for 2010, it turned out to be too ambitious for a District to expect to cure this deficiency in a single weekend without a substantial advanced training effort.

►Some units who did attempt to train their Scouts on GPS did not do sufficient hands-on training so the Scouts could execute on their own.

►Some participants focused almost entirely on using their GPS and essentially ignored their map and compass. Younger patrols especially became frustrated at their inability to locate activity stations using their GPS. For example, some of the Scouts did not understand that in order to use the "goto" function of a GPS, you have to be moving at a steady pace and cannot stand still.

►Some younger patrols did not have basic map and compass skills to fall back on, and required adult intervention to get them back on track.

►Conflict with homecoming of one of the area high schools caused some troops to skew their participants toward the younger end of the spectrum, exacerbating the inexperience level.

<u>SOME LESSONS LEARNED FOR NEXT TIME</u>:
In 20-20 hindsight, given the newness of these skills to many of Camporee participants and the BSA's previous lack of training protocols on these land navigation skills, we could and should have

- **issued more detailed training resources explaining grids to participating units several weeks or months in advance**
- **assisted, in advance at troop meetings, roundtables or the like, units who required assistance to train their Scouts to use GPS and UTM grids**
- **made more detailed written training materials available during the camporee itself**
- **focussed more on teaching UTM grids and grid coordinates.**

Overall comments include the following, with more details below:

- UTM grids and grid coordinates confused many people.
- Many participants had never used or trained on a GPS.
- We could have conducted more indepth-training on site, or insisted that the patrols demonstrate proficiency before releasing them to the field.
- We could have considered asking adults to guide/mentor younger patrols.
- Due to the "fun" factor, we were unable to get the message through with sufficient force that a GPS is NOT a substitute for map and compass.
- Some patrols did not seem to fully understand geocaching.
- We perhaps could have reacted more quickly to prevent younger scouts from becoming discouraged (although the bad weather certainly contributed to this).
- There was confusion concerning which map datum to use.
- One of our activity station UTM grid coordinates issued to the Scouts was off by a small amount.

In general, despite the challenges, the Scouts seemed to have a good time despite the weather. Some adults were a little agitated (and rightly so) over the Scouts' inability to locate targets using land navigation skills, but the average Scout at the camporee seemed to take it all in stride. For example, here's what a Tenderfoot Scout told his Troop at a meeting following the Camporee:

"The Camporee was pretty good. I didn't understand the GPS so we used the map instead. It was different from other camporees because we had to find the activity stations. We learned how to put a bearbag up. We learned these different things on a map, and shot bb guns, and shot paintballs with slingshots.

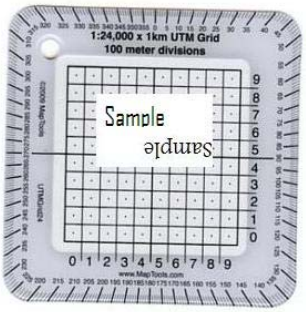
The weather was pretty bad and my tent collapsed in the middle of the night. The wind was pretty bad. The good part was I did have fun. It was fun doing all the activities except the last one. We didn't find any of the geocaches. The bad part was that my tent turned into a pool. It downpoured in the middle of the night. Friday night it was just drizzling. Saturday it was off and on showers. It took a half an hour to get everything set up. Then we got lost and went around in circles. Then we got help from another troop and got to the COPE course. We found no trespassing signs and so we didn't keep on going. We followed the electrical wires and ended up in an orchard."

From a Unit Leader: "Thank you for once again for the Fall Camporee. It was imaginative, educational and fun! Our Troop's attendees came back very enthusiastic, making those that couldn't go, wishing they could. The website was appreciated. Please extend this message to others on your team."

A Patrol Leader said: "Finding the Activity Stations is hard. The Klondike Derby [where you just follow a marked trail] is more fun."

Read On for More Details!

UTM grids and grid coordinates confused many



As our camporee program was structured, UTM grids and grid coordinates were the key to finding all objectives. It was here that we could have put more focus. We taught UTM grids and grid coordinates at the Friday evening training session. We issued each patrol either a USGS or a maptools.com 1:240000 grid overlay that allowed the patrol's navigator to more easily locate a pair of grid coordinates on the gridded topo map they had been issued. We did not permit any patrol to leave morning assembly until they could demonstrate that they knew the grid coordinates of their current location and could plot those coordinates on their topo map. However, we learned that this was simply not enough. Many Scouts did not really understand grid coordinates when they had to use them for land navigation on their own.

Some Scouts did not seem to understand what this grid overlay was for or how to use it to plot a position on their gridded map. Although the map itself directed them to plot their grid coordinates on their map, m*any patrols did not do this and did not understand that all they actually needed to locate the activity stations was an oriented map with plotted grid coordinates*.

In hindsight, we could have issued the maps and grid coordinates on Friday night at the training session and allowed adult leaders to assist Scouts in plotting their grid coordinates. Alternatively, we could have issued maps with grid positions pre-plotted on the maps, and relied on GPS only for geocaching and as a secondary tool for locating activity stations. Or, we could have required all patrols to plot all activity station coordinates on their map before leaving the assembly area. Any of these precautions could have materially assisted patrols in finding their targets.

Comment from a staffer: "It was probably an error in judgment to assume that once we gave the scouts a topo map, grid coordinates + a grid overlay, the patrols would be able to navigate to the general locations of the activity stations even if their gps batteries died. I'm no math whiz, but the cartesian grid coordinate system is pretty basic and XY point plotting is taught in 5th grade math. Nevertheless, many or most scouts were unable to relate the numbers of a UTM grid coordinate pair to points on their gridded topo map. This was apparently a totally new concept for many participants, and we should have spent more time teaching it. If I could go back in time with 20-20 hindsight, we would have made some flag tape squares on the field in front of the assembled mass, told a scout an easting and northing coordinate pair and had him walk to the proper location within that grid square, thereby efficiently training everyone on what a grid coordinate is. The basic concept of grids and grid coordinates was one almost nobody got until we started teaching it one-on-one throughout the day. Of course, the Scouts who were shown it one-on-one got it immediately as it is not that difficult to understand."

Note from another Staffer: "Fun event; we are teaching an important skill, one that is now in the Nav section of the new BSA handbook. In the future our home addresses will be "replaced" by our own unique US National Grid (USNG - a UTM format). USNG will be used by emergency workers. So, teaching our scouts to do this now, is the right thing to do."

Many participants had never used or trained on a GPS.
Some patrols did not understand the capabilities and limitations of their own GPS units. Some Troops purchased a GPS just for this event (which was very cool), but some patrols violated a basic rule of GPS use: **do not *rely* on a GPS if you don't know how to use it and don't understand its limitations**.

Some participants had no idea (a) how to program a waypoint into their GPS, or (b) how to use their GPS to locate a waypoint (i.e., the most basic GPS functionality). Patrols that succeeded understood how to do these basic tasks. One patrol succeeded in finding all geocaches and all activity stations; the unit's leader explained that an enterprising scout in that patrol had simply read the manual for the troop's GPS on the car drive out to the campsite.

Reading the GPS manual seemed to be something that few did in preparation for this event.

Comment from a Unit Leader: “Obviously the winning Patrol proved that if you had a clue, you could do it. Let's not forget that. Most other Patrols proved that if you didn't have a clue, you weren't going to find one laying on the ground outside your tent on Saturday morning. And I will add that 2 of my Scouts claimed to know their GPS's inside and out, and yet they may have ended up as the most lost and most confused Patrol in the entire camp. And this wasn't a matter of ‘Pride goeth before the Fall.’ Claims by Scouts that they are experts in GPS should not be accepted at face value; rather, the Scouts should be asked to demonstrate their [alleged] proficiency. “ [*Note: Even if you understand your GPS, you still may not understand map grids or how to use your GPS with topo map.]*

Comment from a Staffer: “A number of the patrols that made it to my station seemed to have done so by accident. They clearly did not know how to use a GPS or the UTM grid overlays. The training session on Friday night was too late in the game for the first introduction to GPS navigation. Training should have started at least two weeks earlier in the troop meetings. First to explain how to operate a GPS and second how to use a grid template to marry the GPS to a map. Maybe lesson plans distributed at a round table or email to troops would give the clueless a clue for the next time.” [*Note: the camporee staff posted a variety of training materials on a camporee web page approximately two months in advance of the event, and this page was updated periodically with additional information, but the posted information was not as detailed as the training guide that has now been compiled based on our camporee experience*.]

Comment from another staffer: “My observation from the training on Friday night and working with the lads during the day on Saturday was that for the next Camporee or any District event we have, we get buy-in to help unit leaders train up to the event. At Friday night training, some boys showed up with a GPS they had no idea how to turn on. There were no batteries in them, and the scouts had no book and no batteries. The Camporee made extra batteries available for 20 GPS units, and they were all gone before the class was over. Some Scouts brought 1st generation GPS equipment. The District created an excellent event but effective participation required training on skills that are only now entering the BSA training repertoire. That created more responsibility on the District to supplement skills where the BSA has fallen behind.”

Comments from Another Staffer: “Saturday's experience for most patrols is like an inoculation, giving them just enough of a waterlogged experience trying to use a GPS device with mixed results, but within a controlled environment. How many of these scouts/scouters might've thought -- before Saturday - that they could just buy a GPS and go out into the 'backcountry' and all their worries would be over .... they'd always know where they were and never get lost? They probably

learned more about what they didn't know, and what the limitations of a GPS are for an untrained/unprepared user, with that one day slogging around Camp Highroad, and it's sunk in now, no doubt. All in all, even if they found very few of their coordinates, they should still have walked away with a healthy respect for what it's like to be wandering around the woods in bad weather, with a fancy device that doesn't do anything for you if you're not prepared/trained to use it effectively. I keep thinking of adventurers who get into serious trouble when they become disoriented, and the importance of knowing one's limitations, and that of the equipment they're relying on. So perhaps the better measure of 'success' of the program is not so much in how many places they found, in what order, but whether or not they learned something, and will be better prepared in real life situations in the great outdoors in the future ... you can tell people things till you're blue in the face, and it might never sink in that way, but once they endure it themselves, they get it. And by that metric, the program should be considered beneficial to all who participated because they got their 'GPS inoculation' (whether or not all the Scoutmasters see it that way!)."

Note: The Camporee staff was concerned that some Scouts might not be able to obtain a GPS and did not want to burden Troops with having to spend money to purchase GPS units, so the Camporee Staff took the precaution of purchasing some inexpensive older (Garmin Geko 101/201 GPS units) to lend out to patrols who did not bring one. This worked out well. For example, one patrol attempted to navigate using a vehicle type GPS unit, which is unsuited for the backcountry at least because it does not work in UTM grid coordinates (only lat/long). However, it was a little surprising that most patrols did show up with a functional, suitable GPS unit. That is a true testament to the dedication of participating Troops, who wanted their Scouts to be prepared and to succeed. Bravo!!

We could have done more training. Involving more units earlier in the planning process may have increased collective mindshare, revealed potential issues with Saturday's program, and allowed adjustments to be made in advance. Once again, this is possibly because certain the Scouters (even very experienced outdoorsmen and ex-military) may not have personally trained on or used a GPS or grid coordinates and so perhaps did not know the skills sufficiently well themselves to enable them to train their own scouts.

Note from a Staffer: "It was perhaps too ambitious to expect our unit leaders to adapt so quickly. Scouting is, after all, a very conservative organization. A few unit leaders out there think we still ought to be teaching semaphore and tent ditching. The BSA is clearly just now catching up on teaching these important skills. We succeeded in raising the level of awareness of GPS and its importance. And after this event, there is no doubt that units will start using GPS on their outdoor adventures. It will come in very handy. It may even save a life."

Hot Off The Presses: Download your own copy of Chain Bridge District's "Practical Backcountry GPS Training Manual for Boy Scouts, Venturers and Unit Leaders" at www.scoutgps.org

Friday night's training session had the following comprehensive syllabus:

(A) What is the GPS system and how a GPS receiver works
(B) Difference between compass, map and GPS
(C) Everyone turns on their GPS and takes a location reading
(D) What is UTM grid system and what is NAD27 Map Datum
(E) How to find a GPS grid location on the gridded map (everyone uses their current GPS reading and 1:24000 grid overlays to find themselves on the map)
(F) What is a waypoint and how to program one into your GPS
(G) How to use a GPS and map to find a bearing
(H) Using your compass instead of your GPS to follow the bearing and how to do this
(I) Geocaching

We also did not permit any patrol leader to leave the Saturday morning assembly area until he could demonstrate (a) he knew his (correct) current UTM coordinates as indicated by his GPS, and (b) he could point out his current coordinate position on the gridded topographic map. However, we could have insisted that scouts DO more. Many scouts walked away from the training session convinced they understood how to use their GPS, and yet on Saturday morning were unable to (a) input and navigate to a waypoint and (b) use their grid overlay or other means to plot the activity station UTM grid coordinates on their topographic map.

Note: the staff held the Scouts at morning assembly for over 40 minutes until they could demonstrate that they could: (1) correctly read their current position on their GPS, and (2) plot that UTM position on their topographic map. We also offered to assist any patrol who did not understand what to do or was confused. A few of the patrols took advantage of this and stayed to ask questions and receive guidance. However, as could have been expected, some scouts complained that this staging process was "boring" and took too much time, and they were anxious to get off to the activity stations.

Comment from a Staffer: "The Friday night training session was a worthy effort to get people up to speed. However, given the fact that there were likely 30 GPS of 20 different models present, and that half of them had been seen by Scouts for

the first time this past week, it was probably a bridge "way" too far to expect any genuine competence on Saturday. In any future such endeavor, I'd suggest taking a page from the Baltimore Orienteering Meet and spending 2 or 3 hours on Saturday morning with hands-on instruction on how to use a GPS. You could set up 5 posts in the camping field to demo how to figure out where you are and where you need to go, with a side benefit of having everyones' GPS units properly calibrated and set to the correct coordinate system. A geocache ammo box could also have been placed at one post so everyone could see what it was and what it looked like, and what they were supposed to do with it. The use of the template also could have been demonstrated multiple times. Then you'd have a reduced program (fewer stations, or closer together, and fewer caches) for the afternoon. I think such preliminary hands-on/real situation training would have reduced a good deal of the confusion and frustration. if we had had an open field "Real-Life" training scenario on Saturday morning, the overly long assembly would have been eliminated, and everyone would have had something to do. Yes, 3/4's of each Patrol would be doodling in the grass or playing grab-ass with each other at each post, but enough would have paid attention to have learned what they were supposed to be doing. I am not suggesting a mass mob from post to post, but rather 5 subgroups each starting at a separate post. If 5 posts is too much, have each Patrol hit 3 of the 5, or keep going til they exhibit competence (whether 2 posts or 7), then let them go. If 30 kids per subgroup is too many, then ask each Patrol to send only their Patrol Leader and 1 or 2 other Scouts - that would keep it manageable. The Unit leaders could certainly use the free time with the rest of the Scouts to do other things."

One unit leader made a great suggestion of putting training guides up on youtube. Staff members following up on this suggestion commented that "perhaps putting future Camporee Guides on YouTube, as well as on the District's web site, would be more beneficial. We learned how few people read the instructions, perhaps a picture (video) is worth a thousand words. We could have somebody give a 5 minute demonstration of general GPS characteristics, show what they will be looking for, and maybe a shot of the terrain. Making a video seems easier than a podcast.

Another staff member commented: "I just looked at YouTube - there is certainly a video for each GPS unit ever built. All of varying value. Regardless of the quality of the instruction, this may be the BEST tool for todays Scouts to begin learning how to use a GPS. I say "best" because it might stand a chance of capturing their attention for more that a nano-second. Good suggestion!"

Another staffer commented: "Assuming for the moment that learning something useful and having fun override competition, if possible, it would be neat to have experienced GPS adults at a few stations along the course. Scouts will only take so much class time before attention span flags before an event. They want to get going. Once they realize they should have been paying attention, they might be lost. By having an adult in the field give them a "refresher" course, they may

be more focused. Having a GPS class at Roundtable is a good idea. There are very few leaders capable of explaining all the various devices in their troop."

Note from a Staffer: "Clearly you are right, distributing the passports in advance would have been a good thing. We could also have distributed the image with all station locations marked to unit leaders in advance. There were however some practical problems, namely that we only decided on Friday (based on an unexpectedly large number of registrations) to add a sixth station. In other words, we intentionally delayed completing the passports to preserve flexibility. We also had wanted to list the geocaches on the passports, and we had to delay deploying those because they contained candy that you don't want sitting in the woods very long (for obvious reasons). But in hindsight, there was no reason why we couldn't have preselected the geocache locations in advance and then deployed the geocaches at those preselected locations, as you suggested."

NOTE: Check out the Backcountry GPS Training Guide that Chain Bridge District has prepared based on our collective camporee experience. This Guide should help units leverage off what their Scouts learned at the camporee and teach/learn the basics of the UTM grid and GPS usage.

We could have considered asking adults to guide/mentor younger patrols. We cautioned adults not to interfere with the patrol method, but the land navigation skills we were asking the patrols to execute were too advanced for many younger scout patrols. Having an adult along to encourage younger scouts and keep them on track would have led to a more successful experience. However, escort adults need to strictly avoid becoming 45 year old Patrol Leaders; i.e., teach the Scouts as necessary to succeed, avoid "Follow Me Boys." [Note: experience tells us it takes *extraordinary discipline* for an adult to avoid displacing the patrol leader or becoming a crutch in such situations, and it significantly changes the dynamic of the camporee. The Camporee guide advised unit leaders to "Train 'em, Trust 'em, Let 'em lead." A significant part of that formula is to train the Scouts adequately so they are not being set up to fail.]

Comment from a Staffer: "I intercepted a patrol who was returning back to camp around 11:30 in the rain and asked them where they were supposed to go next. They told me they didn't know. I looked at their passport and recognized it was map/terrain features. I showed them how to plot that on their map. The PL said "we just came from that way", turned to another scout and asked "you ran ahead did you see anything?". The scout responded "well I did see a couple of adults standing out there ...". In other words, this patrol got all the way out to a distant activity station and then turned around and came back because their point man did not give them reliable info. We give the PLs a TON of credit for what they did accomplish that day."

We were unable to get the message through with sufficient force that a GPS is NOT a substitute for map and compass. Additionally, to assist those scouts who did not know how to read and orient a topographic map, we could have given the Scouts a larger, more detailed satellite image marked with the roads and trails. The camporee staff posted a caution on an instructional page of the event's website and persistently pushed the idea throughout training and instruction that a GPS is not a substitute for a map, ***but the message did not get through***. Many patrols tried to rely solely on their GPS (perhaps because it was more fun than a map?) and did not take out their topo map until a staff member directed them to take it out and demonstrate how to plot their next objective on the map. In addition, some of the younger scouts may not have understood how to orient their map or how to read a topographic map. The camporee provided the Scouts with a satellite image of the camp with some of the trails marked, but as a failsafe for Scouts who could not make heads or tails of their topographic map, a more detailed (enlarged) satellite image with trails and road marked would probably have helped.

One Staffer commented: "If I could turn back the clock, I'd do the following:

a) 30 days prior; collect data layout the course (like we did a week before the event)

b) When we take the grids, allow for at least a 5 minute "integration" and collection in one spot.

c) Build the map products.

d) Check the products at the venue NLT two weeks prior.

e) Consider placing more data on the maps/aerial photo. Perhaps if we just named the station, we could have focused the guys attention on the task a little better.

f) Finalize the products and post on the web for the scouts to download.

g) Publish the passport cards in advance for download.

h) Having instruction the night before was a good idea.

i) As previously recommended, a two or three hour practice session first thing in the morning is a great idea.

j) Have umpires or facilitators throughout the course, not to tell the scouts where to go, but rather coach and validate the objectives as listed on the map. We missed an opportunity here. [Note: some staffers did in fact go out onto the course and assist all the patrols they met; in other cases, Troop adult leaders were coordinating and guiding their Scouts remotely by cell phone or otherwise.]

Comment from Another Staffer: "The two maps associated with the cards were too small and showed too little detail to be of real help - I think that's why many Patrols ended up ignoring them and trying to navigate based on only their GPS's.

I believe it would have been better to have an additional, larger scale map with the basic roads and trails marked, and the Patrols would have then used the GPS's to see where their next point was, and subsequently used the maps to elucidate the best route to get there, confirming their locations with their GPS's as they went along and especially when they arrived at each station or cache. If it would have been possible to put the road/trail/cut data on the satellite image 1:24,000 map, that would have sufficed. Instead, there were only two partial trails marked on that map. The various Patrols we counselled had no clear understanding of how these were supposed to be of any use, because (except for the southern terminus of the western trail) they did not appear to link to anything at either end, but rather just started and ended apparently nowhere. Others did not understand that the geometric shapes were two of the fields. Several of the Patrol Leaders at the Score Orienteering said (to paraphrase) that "they wish that they'd had these [Score-O] maps yesterday.""

[*Note: the topo maps provided were the identical (1:24000) scale of the most detailed (7.5 minute) available USGS maps of our area; enlarging the topo map would have changed the scale and destroyed the ability of the maps to accurately indicate distance as well as rendered the grid templates useless and created an artificial exercise (see below); however it would have been possible to provide each patrol with a second, enlarged satellite image with trail details even though in actual outdoor situations the best maps available will likely be 1:24000 USGS topo maps*.]

Another Staffer Comment: "I think that we were correct in using copies of the USGS 1:24k Quads as well as a Google Earth image. These resources are available to any scout, gratis. Unless you are at an orienteering meet, such as Quantico OC, you are not likely to receive a map product better than what we provided."

Another Staffer added: "In fact, the maps provided to the Scouts were equivalent what they would be using in a real backcountry experience such as Shenandoah National Park or Philmont, except that Camp Highroad is a safe and controlled environment as compared to the real backcountry. However, given the apparent lack of understanding by some Scouts on how to use and orient a topographic map, we could have made the decision to give Scouts larger "training maps" in the form of Google Earth satellite images with trail details, as has been suggested."

Comments from Another Staffer: "Re Accuracy of maps and GPS' units. Assuming all datum's are aligned, the following needs to be taken into consideration.

a) USGS Quads are accurate to 12 meters (40 ft) horizontal.

b) GPS unit accuracies can vary, but generally indicate the accuracy at that moment. Try the following: turn on your GPS, allow it to find itself,

sit in a lawn chair for 20 or so minutes. Then, notice that the GPS reports that you have been moving within a 10 to 20 meter ellipse.

c) Compound this with different GPS units (as well as 35 different users) and you can get errors in position of 50 plus meters. Standing side by side, two different GPS units may not necessarily read the same thing (but they should be within 20 meters of one another)."

Some patrols did not seem to fully understand the geocaching concept. Despite training on the subject, some patrols did not seem to fully understand geocaching (not everyone attended Friday night training). While each of the Camporee's six geocaches were visited, they were not visited by as many patrols as were expected:

Geocache	Description	No. Patrols Visited
1 (Deer)	In plain view next to a deer stand along an established trail	3
2 (Tree)	Behind a tree along an established trail	4
3 (Vesper)	Marked by Flag Tape off of a large open field on Vesper Hill	2
4 (Rock)	Hidden in a Rock Cache immediately off a road	1
5 (Pond)	In plain view on shore of boat pond	5
6 (Woods)	Behind a tree off of an established trail very near to main camp	6

To assist patrols who were unfamiliar with geocaching, we could have planted a few geocaches in our campsite on Friday night and directed the patrols to locate them. This would have given the patrols "hands on" experience in advance so they could have done the geocaching more successfully on Saturday.

We perhaps could have reacted more quickly to prevent younger scouts from becoming discouraged. As soon as we became aware that some younger scout patrols were having trouble, camporee staff immediately intervened by (a) providing assistance, and (b) directing Scouts to the activity stations closest to them. We also radioed all activity stations and instructed them to accept Scout patrols irrespective of the sequence listed on the patrol's passport. This resulted in longer waits and overloading for activity stations close to camp, but it also enabled more patrols to participate in the excellent activities in a manner that was decoupled for the land navigation exercise. Keep in mind that one activity station was about 100 feet from Camporee headquarters, another was just off the road into camp, and a third was on the far end of the open field we were camping in, and that it was in

fact possible to find nearly all Camporee objectives simply by hiking the camp's trails.

Unfortunately, it only took about an hour of frustration with their GPS equipment in bad weather before some of the younger Scouts became discouraged. In many cases, it required the unit's own adult leadership to intervene and get the Scouts interested in returning to the course and completing more of the activities. On the other hand, some of the younger patrols were quite adventurous and had a great time even though they were unable to locate many targets. Furthermore, the bad weather was clearly a very significant factor. The patrols would have had more patience if the weather had been clear and crisp as opposed to muddy and rainy.

There was confusion concerning which map datum to use Those who have used their GPS for geocaching are used to WGS84 map datum. Our gridded USGS map used NAD27 map datum so we of course had to use NAD27 if our GPS coordinates were going to correspond to the USGS Topo map. At Friday's training session, we explained the map datum concept and instructed everyone to set their GPS to NAD27Conus, but some participants may have failed to set their GPS correctly and in any event this caused a lot of confusion.

Comment from a unit leader: "The use of two systems (WGS and NAD) seemed to me to just add to the confusion. In retrospect, we should have gone with just one. Or have had a "GPS Czar" personally check and if necessary re-calibrate every GPS at the Camporee to make sure they were correct." [Note: GPS units use WGS as their "native" datum; it is *necessary* to select NAD27-CONUS as the map datum to use the coordinated with a gridded USGS map surveyed using NAD27]

Comment from a staffer: "I understood that there were discrepancies in the datum. Hind-sight tells me we should have used the radio network to notify the six stations of the corrections so we could inform each patrol as they wandered by." [Note: the radio net was used to ask all activity station personnel to not permit patrols to leave their station until they could demonstrate proficiency in UTM coordinates.]

Comment from Staffer: "Regarding datums - We only used one datum, that was NAD27. We have to use NAD27 as that is the datum used by current USGS Quad. This is non-negotiable. Not using NAD27 can and will result in errors of 200 meters."

From another staffer: "I'm pretty convinced that the map datum issue had been resolved for nearly everyone by the time the patrols left sat am assembly (we took care of this by making sure everyone's GPS read the same thing before anyone left). I qualify with "nearly everyone" because after the patrols had been

dismissed, one patrol walked up to me carrying a garmin highway type gps like the one my wife has in her car + asked me to show them how to switch it to NAD27. Needless to say, that instrument was totally useless, it was incapable of operating on UTM let alone NAD27. I had to lend them a Geko 201 and show them how to program and use it. Yikes!!."

One of our activity station UTM coordinate pairs issued to the Scouts was off by a small amount. This should not have created significant problems because the activity station was clearly visible and audible from the coordinate location, but the error added to the confusion some patrols were experiencing. Therefore, any and all coordinates given to the scouts should be double or triple-checked for accuracy by adults who do NOT know the course.

Other Saturday Comments:

From a Staffer: "Slingshots went well and two relays of 10 shots each seemed to adequate. We did have a big rush at the beginning, and then it was rather sparse til the very end, when we had another rush. It may be that when we have shotgun starts, that the "close-in" stations should have fewer Patrols scheduled early; the time spread as most of the Patrols go to the farther-out stations first would reduce the early crush at the close-in stations, and better space out the Patrols through the rest of the day, at all stations."

From a Unit Leader: "My Troop rated Rifles #1, Slingshots #2, and Pioneering #3, but enjoyed all three. [This rating order could, of course, have been predicted with dead certainty 5 years ago.] Those were the only stations they got to, all late in the day. After a rather dismal and dispiriting morning, they left the Camporee happy."

From a Staffer: "I saw an awful lot of scouts without any type of rain gear. I only mention this because our comments have underplayed the impact of weather on enthusiasm."

From a Staffer: "As for the campfire, building the fire Saturday morning and covering it with a tarp, heavily staked down, before the worst of the rains hit and wood got too wet definitely made a big difference, so I'd recommend putting that on the 'must do' list for next time. We did what the OA handbook actually recommends that the fire be started first, and that better fit our circumstances, so we just waited till the campers came into view, and lit it then. The OA Scouts they had doing the ceremony did a great job, but they were ordeal members, all fairly new, with no prior experience. Better coordination/communication with the OA would be helpful for next time. Lastly, the program went more quickly than we thought, so it would've been nice to have a little more content lined up in advance, although the impromptu nature of the latter part of the campfire program was really fun."

SCORE-O ORIENTEERING MEET EVALUATION

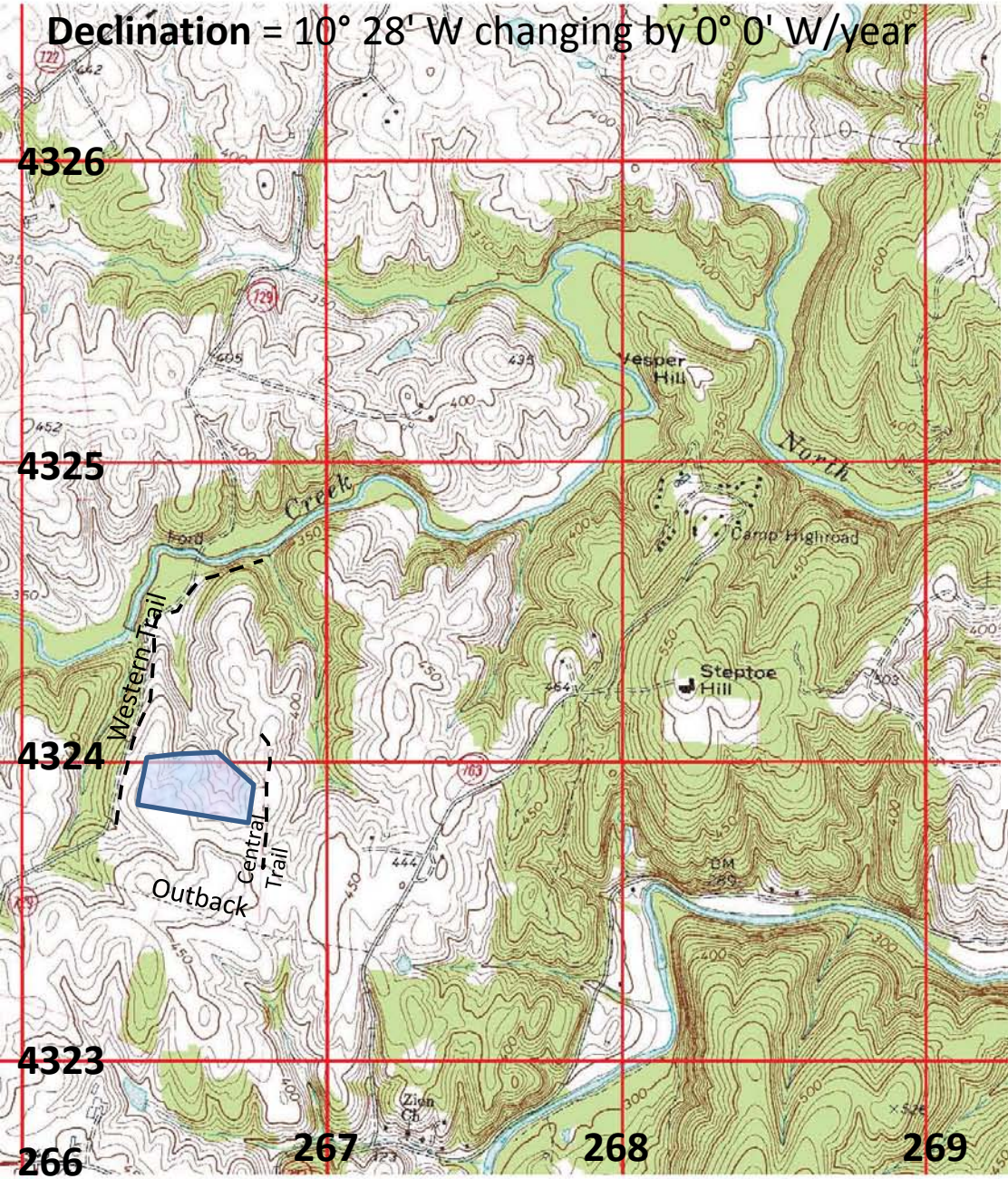
(1) It was clear (both from the Saturday questionnaire answers and then at the Saturday night PLC) that most Units had not read or even downloaded the Score-O instructions. Which, I suppose, is par for the course these days, but frustrating nonetheless. It may be that in the future, we'd be better off not only posting the instructions on the website but also sending it via attachment to all Units' POCs. That wouldn't solve the problem, but it would at least help.

(2) Setup was quite time-consuming, but half of that (probably more) was simply elucidating the road and trail system and geographical features of the site. Future such events shouldn't take a third as long to set up. In addition, "when" I finally get a modern GPS with accurate breadcrumbing capabilities, I will certainly create a high quality map to take the place of the hand-drawn version that was used this morning. We can obviously use all the recovered ribbons to set up future Score-O events that would be "somewhat" different than what we had today - however, clearly there is a limit to what can be done unless we start placing flags in the woods instead of on the trails.

3) Probably the biggest personal surprise re the Score-O was the necessity to "sell it" to the attending Units. I didn't expect that at all, and I still don't understand it (you already paid for it, you're here anyway, the weather's great, the Redskins aren't on til Monday night - what's the problem?) Four of the units still onsite Sunday morning did not participate, and another sent only 1 of its 6 Patrols. This despite the fact that we emphasized that it was a beginner level course, by walkers, at the campfire, and at the PLC. The real shame of this is that those Patrols who did the Score-O "seemed" to be excited and enjoying themselves, and left the Camporee on a high note. Those leaders who talked their Scouts out of it deprived them out of both a learning experience and a fun time. I believe some guy once said: "Scouting is a Game with a Purpose." I'll add: "At least for those who participate."

4) It is too late for Units to participate in this year's Baltimore Orienteering Meet (The "Maryland State Scout Orienteering Championships"). However, we should direct all Units that enjoyed this morning's event to participate in the NCAC Orienteering Meet on 20 March 2010. That's the one run by Jim Chaplin <jhchaplin@comcast.net>, and it's much more for Units beginning Orienteering, versus the much more challenging Baltimore event.

Comments from a Unit Leader: "The Score-O game on Sunday was seen by our boys as "... a lot of fun." Job well done!"



Chainbridge District 2009 Lost Camporee
Map Datum NAD 27; Last Photo Check 1981
Scale 1:24,000
Contour Interval 10 Ft
Graphic Date 18 Oct 2009

1. Practice LNT --Keep to Trails - - - - - - -
2. Off Limits Area
3. Don't Cross North or Goose Creek
4. Navigation Tasks
    1. Read UTM Grids from Passport
    2. Transfer UTM Grid to Map
    3. Program Way Points into GPS
    4. Navigate to a Point
    5. Follow a Heading, Correct for Declination
5. Have Fun! Stay Safe! Don't Get Lost!
6. Return to Rally Point NLT:_____

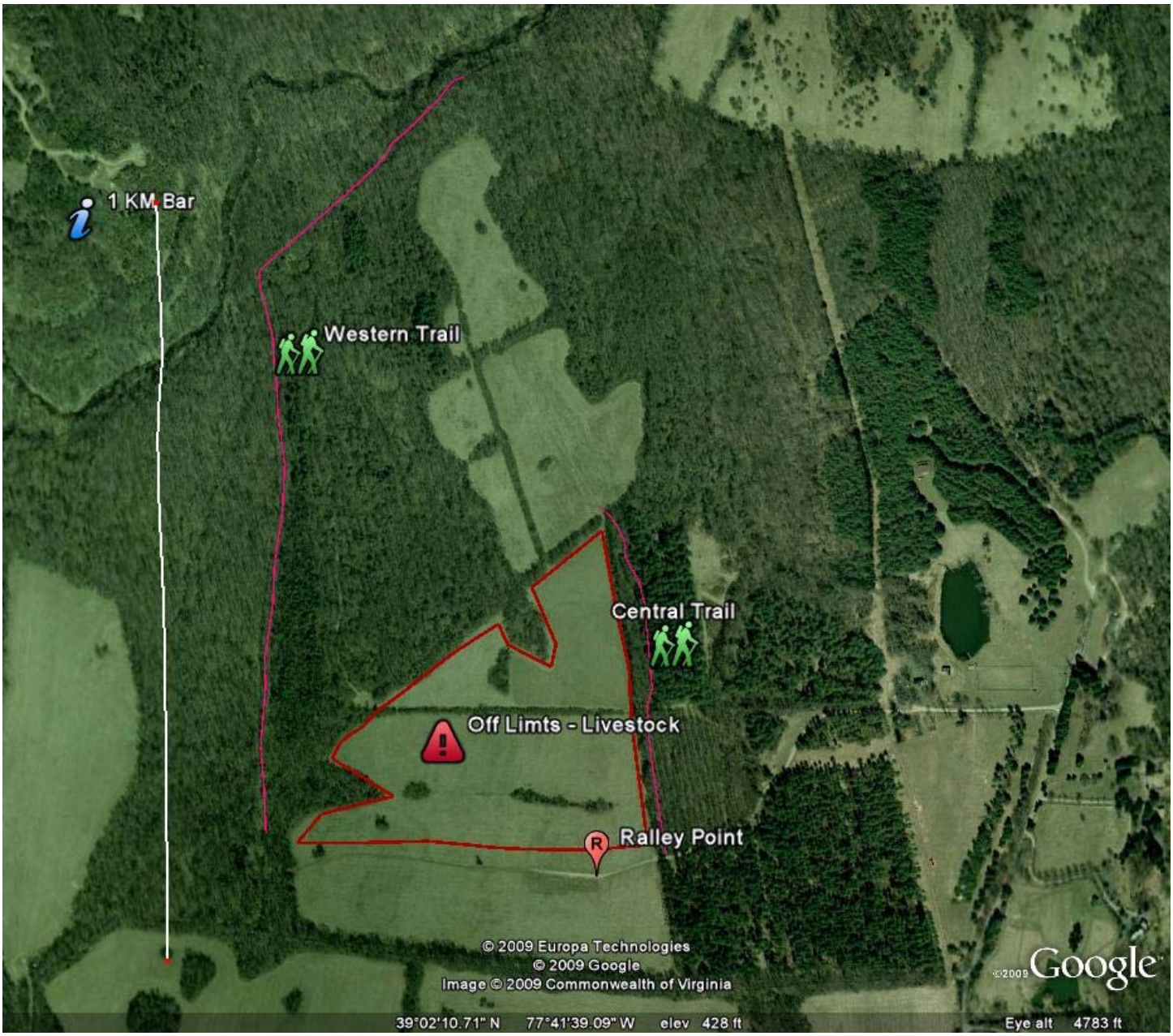
CHAIN BRIDGE LOST!

Patrol No. ___ Patrol Name_____ Troop ____

1. Set your GPS to UTM/NAD27CONUS
2. Make sure to get staff initials & a puzzle piece from each staffed location
3. Visit locations ONLY in the sequence below (or you will be turned away)
4. Do not tamper with geocaches (You're on your Honor)
5. Don't forget extra GPS batteries (staffed locations MAY have batteries)

Seq	Easting*	Northing	Initials
1	026	432	
2	026	432	
3	026	432	
4	026	432	
5	026	432	
6	026	432	
7	026	432	
8	026	432	
9	026	432	
10	026	432	
11	026	432	
12	026	432	
13	026	432	
14	026	432	

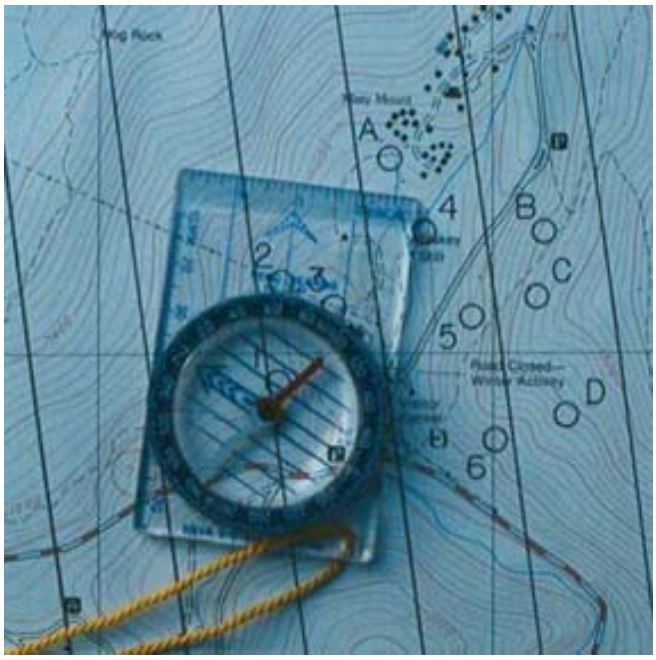
All grid locations Zone 18S UTM/NAD27CONUS Map Datum


1 KM Bar
Western Trail
Central Trail
Off Limts - Livestock
Ralley Point
© 2009 Europa Technologies
© 2009 Google
Image © 2009 Commonwealth of Virginia
©2009 Google
39°02'10.71" N 77°41'39.09" W elev 428 ft
Eye alt 4783 ft

Chain Bridge District

SCORE-O

Orienteering Meet



Camp Highroad

Sunday 25 October

2009

Chain Bridge District Fall 2009 Camporee "Lost!" - Score Orienteering Meet at Camp Highroad

What Is It? - A Score Orienteering ("Score-O") Meet is a timed, wide-area orienteering game, the purpose of which is to locate and identify markers based on map reading, terrain matching, compass skills, and pace. Because it is timed, it is also an exercise in cross-country athleticism.

Patrols - This event is designed and intended as a Patrol-based competition. As such, Troops should use their "natural" Patrols, and NOT swap Scouts between Patrols to create "Gorilla Patrols" for the purpose of winning the competition (exceptions are noted in the next paragraph). Except as specified below, Patrol Leaders and Unit Adults are requested to ensure that only their "natural" Patrols compete.

Patrol Scouts will participate in buddy pairs; if a Patrol has an odd number of Scouts, it can have 1 buddy triplet. Patrols are limited to a maximum of 4 pairs, or 3 pairs and 1 triplet (Note: From here on, buddy pairs and buddy triplets are referred to as "teams"). If a Patrol has more than 9 Scouts, it may transfer a Scout or Scouts to another Patrol that has less than 9 Scouts, or it can split into 2 Patrols. If 2 Patrols in a Troop both have an odd number of Scouts, the larger Patrol may transfer 1 Scout to the smaller Patrol to give both Patrols an even number of Scouts. Finally, if a Troop has 2 Patrols with 9 Scouts or less combined, if they wish they may join together to make 1 full size Patrol.

Mandatory, Forbidden, and Suggested Equipment - Each team must have the following equipment: A good compass, a watch, 2 pens that contain ink that doesn't "run" if it gets wet, and a piece of paper with the cell phone number(s) of their adult leader(s) who are at the Camporee. They may have a cell phone, for emergency use only (the phone should be fully charged, and must be turned off during the competition). They may **NOT** have a GPS, a radio, or any other electronic device. Each team will receive a Score-O map, and must LEGIBLY write their names, their Patrol name, and their Troop number on it in ink before the start of the competition. Each team should carry some water and a few candy bars or other high energy snacks, but should avoid carrying heavy daypacks. If the weather is uncooperative (wet or windy/cold), each Scout should also wear and/or carry appropriate clothing. Boots are recommended, especially if it's raining, but heavy-duty sneakers will suffice (however, Scouts wearing sneakers in rainy weather should have an extra pair for after the competition).

The Competition (How it Works) - There will be 40 or 50 "flags" (yellow caution tapes) scattered around the camp, ranging from close to far away from the starting area. Each flag will have a point value, ranging from 5 to 50. Flags that are close to the starting area are worth the least, while those that are far away are worth the most. Each flag will have a unique set of alphanumeric codes written on it, that serve to identify it, for example "R27 Y52 G07 B98." The locations of the flags will be marked as small circles on the Score-O map, which each team will receive a copy of; in some cases, compass headings and distances from "landmarks" will also be written on the map as hints. The goal for each Patrol is to collectively get as many points as possible, by correctly marking the appropriate alphanumeric code for each flag on their maps, and returning to the starting area before time expires. The letter designations in the alphanumeric codes stand for Red - Yellow - Green - Blue; if a Troop has multiple Patrols competing, each Patrol will have a different assigned color (for example, a "Red Patrol" would write "R27" on its map in the above case, while a Blue Patrol would write "B98" on its map for the same flag). The point value for each flag will be written within its circle on the map.

Note that each flag counts only once, no matter how many of the Patrol's teams mark it on their maps; this means that duplication is worthless. Also note that there will be a large number of "false flags" scattered around the camp - many of these will be fairly close to legitimate flags. These will be identical in appearance to the legitimate flags, but have zero point value. They are placed to penalize guessing, poor orienteering, and/or following other teams instead of doing your own orienteering.

Strategy - Obviously, there are strategy elements to the competition. The Patrol Leader needs to divide his Patrol into appropriate teams. "Appropriate" means that the Scouts within each team should be roughly matched by physical size and athletic ability, so that 1 Scout doesn't outrun his buddy or buddies. The Patrol Leader may wish to assign either specific sets of flags or general areas to each team so that no one is wasting time going after the same flags. The Patrol may wish to focus on only high value flags to maximize their point total - but this risks some or all of their teams not getting back in time. Or they can instead focus on low and medium value flags, to maximize their chances of getting them all and getting back in time. They may also wish to assign flags based on athletic ability, with their most athletic teams trying for the furthest flags, and so on. Finally, the Patrol Leader may wish to establish an appropriate "drop it and run back" time for each team to return to the starting area;

obviously, teams traveling the furthest need to start their returns the soonest. Note that it would be quite a challenge for any single Patrol, even one with 4 teams, to get all 40 / 50 markers.

Time Issues - The official time will be announced just before the competition begins - all competitors should synchronize their watches with the announced time, and be very mindful of the clock and where they are at all times. **There is a 1 hour time limit**, started and ended with an air horn. The last 2 minutes will be counted down in 30 second increments, and the last 10 seconds by seconds. The Patrol Leader must collect all his Patrol's maps, staple them together (a stapler will be on site), and turn them in before the final horn sounds. If he still has teams out on the course, he can wait til the very end to turn in whatever he has, but **1 second late is too late**. Another Scout should be designated to handle this duty in case the Patrol Leader himself is still out when time expires. Every Scout must sign his map's "Honor Statement" before turning it in to his Patrol Leader or his designee.

Additional Competition Rules - Note that there will be a number of adult competition monitors on the course (volunteers are needed!)

A) Teams MUST stay together at all times! If a monitor finds a solo Scout, his team's map will be marked as DSQ'd (disqualified).

B) No adult escorts or "followers" are allowed. All teams are to compete independently. If there is a salient Health and Safety reason for an adult escort, this must be approved in advance by the event coordinator, and will require his signature on that team's map. [As an aside, said adult MUST be in excellent physical condition, and capable of long distance running.] In such cases, the authorized escort may NOT "coach" his team in ANY way. If a monitor finds an unauthorized adult or adults escorting a team, or observes an authorized adult escort coaching a team, their map will be DSQ'd.

C) Teams MAY NOT TALK TO OR SHARE DATA with ANY other Scouts or adults. Again, all teams are to compete independently. [As an aside, Scouts should never assume that other teams know what they're doing at an O-Meet.] If a monitor observes teams collaborating, their maps will be DSQ'd.

D) Removing, vandalizing, or hiding a flag is grounds for DSQ.

E) Possession of any forbidden electronic device, or use of a cell phone during the competition for any reason other than an obvious emergency, are grounds for DSQ.

F) Everyone must stay out of any planted fields, and also any fields where cattle are grazing.

G) All Teams MUST return to the starting area, and Patrol Leaders and Unit adults MUST track and ensure that everyone has returned. "Assume NOTHING!" Teams may NOT just "give up" during the competition and go play in their camps or sit in their cars. Similarly, teams who are still out when the competition ends should still hustle back to the starting area, to prevent needless searching for them.

"Lost?" - Teams should focus on knowing where they are and staying "within bounds." We will have some "Scouts - Do Not Pass This Point!" signs at several critical locations, but obviously it will be possible to bypass these while bushwhacking. Teams who end up genuinely lost should call their adult leader's cell phone when they get a good signal (Note that cell phone coverage around Camp Highroad is "spotty," and Scouts who are lost may need to get to higher ground to acquire a good signal).

This is the Honor Statement:

All Must Sign! On our Honor, during this competition, we have NOT: A) Requested or received any assistance; B) Offered or given any assistance; C) Compared maps with any other team; D) Removed, vandalized, or hidden any flag; or E) Used any forbidden electronic device.