



THE TRACKER

Monthly Newsletter of the Inland Empire Search and Rescue Council

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GPS Usage, or How I Learned to Love UTM

Mark Kern, Cave Rescue Team



In San Bernardino, we use GPS extensively to track our volunteers when they are performing a search and also to determine what areas have been searched in an area of interest. Reporting your position is also important. With these various uses of GPS in our job, consistency is critical for smooth operations. Operating your GPS is much like breaking an addictive habit; it is a stepped process that requires communication with your sponsor (Operations) and counseling (debriefing) and group therapy (initial briefing and team assignments). This article will help you break the habit and fear of the GPS and will provide you with the information you will need to operate your GPS efficiently and provide the data needed by the Operation team.

First and foremost, make sure you are on the same datum. As San Bernardino works with many other counties, we all don't use the same datums, and I can't tell you how many times I have heard confusion between operations and a search team who where on different datums! A datum is the model by which a map is created.

The most important thing is that the GPS datum and map datum matches. Here in San Bernardino, we use North American Datum 1927, which is expressed as NAD27 CONUS (also known

as NAD27 or NAD27 US). In the Garmin GPS system there are many NAD27 entries (as I suppose is the same for the other major GPS manufacturers) so make sure you are using CONUS, and not the first NAD27 you find. The picture at the bottom of page 4 shows what happens if your GPS datum and map datum doesn't match. This will be what operations will be tracking you at (the wrong place) if you don't match.

Always, always make sure your GPS matches with the operations map datum before you go out into the field. As San Bernardino uses NAD27 CONUS, confirm this is the datum you should be using! The majority of the maps we use are 1:24K topographical maps which are NAD27 CONUS datum.

Second, make sure you are using UTM. This point is confusing as Aviation uses Degrees Minutes due to the instruments using these coordinates and this is how they navigate the helicopters and airplanes, however; in the field you only need to use UTM. Operations will translate the coordinates into a usable form for Aviation for you. UTM is Universal Transverse Mercator and is a grid system used on most topographical maps. Aviation use aeronautical maps which have a different grid (degrees, minutes, seconds) and rely on the aeronautical GPS instrumentation which is set for the Aeronautical maps. Report your position, when requesting

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What's New in Volunteer Forces?

Lt. Virgil Merrett, Volunteer Forces Unit

During the months of May and June Volunteer Forces has distributed some safety SAR equipment (Wish List) to the teams. The items were mostly rope, webbing, cord, rock helmets, and a few Garmin eTrek GPS's.

Darren Goodman will be sending out a mass email to the team coordinators and commanders to have you start working on next years Wish List. Again, the focus will be on field SAFETY equipment items only based on a continuing tight departmental budget.

The additional search plans for the Katz aircraft were developed as previously discussed and are in the process of being conducted now. During the days of June 12th and June 19th additional searches are being conducted in the South Fork Canyon area of Lytle Creek. The overall plan will be to have the SAR Teams conduct foot searches in the wash and

ridge areas of South Fork Canyon covering an assigned grid area. There will also be additional air searches conducted at the same time by 40 King.

We are also scheduling a fixed winged search aircraft that has a high zoom mounted camera onboard. The high quality finished film will be examined by Volunteer Forces personnel for any anomalies. The area of focus will be the South wall of South Fork Canyon where there is still some heavily treed sections.

As we approach the summer season the threat of Wildland fires in our mountainous areas grows. This hazard will be in addition to the normal lost hiker type of incidents we will face this summer. Please keep this thought in mind as you conduct your monthly trainings and preparations.

*Take Care,
Virgil Merrett*

There's No Business Like Snow Business

Sonny Lawrence, Cave Rescue Team

During this past January, our mountains provided some of the most treacherous winter conditions I have experienced locally. This



resulted in a number of deaths to wilderness explorers and injured SAR members. One out-of-county SAR member shattered his leg! This punctuates the need for certification in the county's Winter

Alpine Basic Mountaineering Course (BMC). However, herein lies a paradox. We have had many dry winters in a row, preventing us from winter training, with sporadic difficult conditions demanding expert skills. For the past two years Winter Alpine BMC, lead by Frank Hester from the Wrightwood team, has been taught at local ski areas. In part the reason we are able to access those snow slopes is because there is insufficient snow to ski on. This made it marginally useful for BMC training. Nevertheless, a number of SAR individuals persevered and developed the basic understanding and skill set to be able to approach winter missions in our mountains safely.

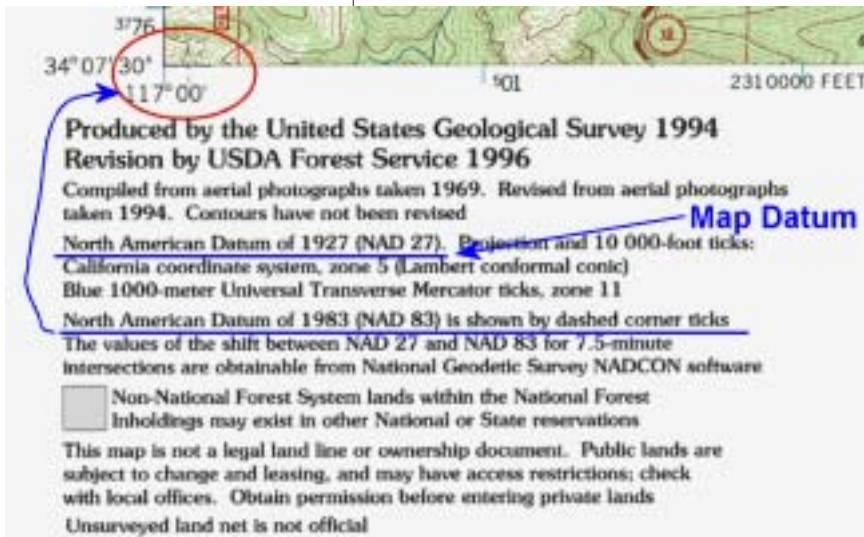
BMC is built around a variety of winter alpine considerations. The format of the course involves lectures, reading, demonstrations and hands-on experiences. Both student and teacher continually learn in this arena. The "test" is a learning device which complements the demonstrations. BMC skills need to be continually used in order to maintain proficiency. This once again is a paradox given the paucity of snowfall. Dedicated winter SAR members look high and low and travel great distances for applicable environments. The following is representative of the content areas covered: mountainous terrain, medical conditions, clothing, snow anchors, moving in the snow and ice environment with crampons/ice axe/snow shoes/ropes, protection from weather and nutrition. This course builds on content from PVS and BSAR. It borrows from courses taught on high altitude mountaineering and glacier travel. However the winter alpine environment in the San Bernardino mountains has unique aspects. Hence BMC requires tailoring of information to fit our specific needs.

See "BMC" on p. 8



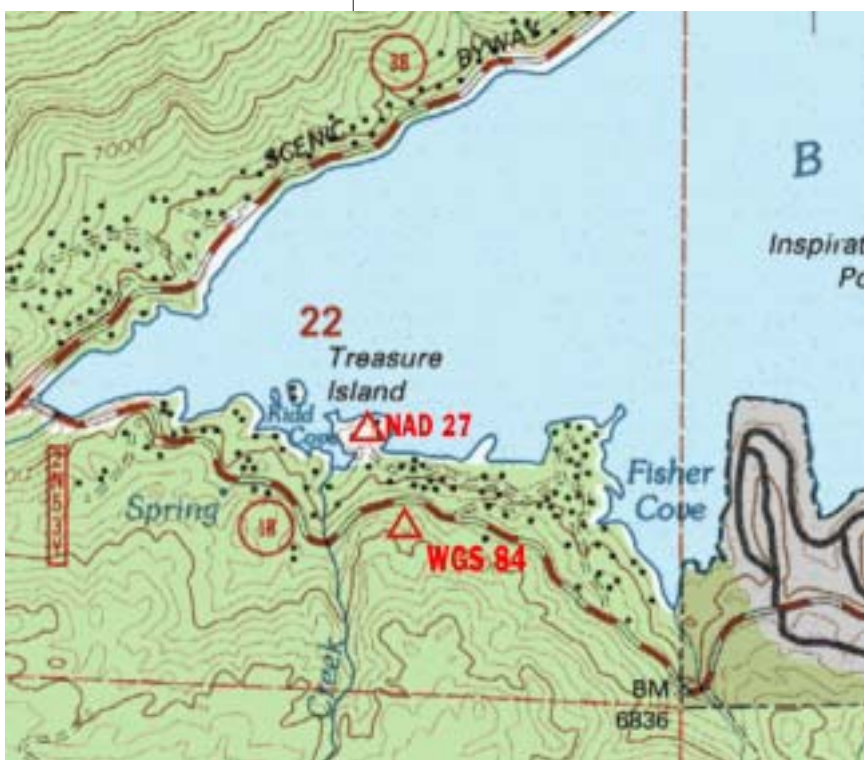
GPS

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aviation, to the command post as UTM so that command can report to aviation the degrees, minutes, and seconds.

Third point, reporting your UTM position - Reporting your position to Operations is another point worth reviewing. When field personnel use different methods of reporting UTM positions, it requires the folks in Operations to translate and adapt, which frequently causes Opera-



tions to re-contact and clarify. This causes an increase in radio traffic and or mis-reporting of position. We will use the coordinates of 11 S 474876 3773492 as an example. Some GPS receivers may display this as 11 S 0474876 3773492; notice the leading zero for the first set of digits (the easting). A thorough discussion of UTM is not possible in this forum; let us take a few moments to look at practical aspects of position reporting.

The first number of the position string (11 in this example) indicates the zone. Since all of Southern California resides in zone 11, it is not important to report the zone. In fact, it is probably safe to say that we will never be involved in a search that spans a UTM zone (unless we are called on a mutual aid incident that sits at a zone border). The letter designation indicates a latitude band, and that will also remain the same on any given search that we will encounter. There are a variety of ways to report the position for our example above. Probably the easiest is to just report the entire string. Remember, the UTM coordinate system defines squares of a certain size. The position given above defines a grid that is 1 square meter. While most GPS receivers in use today will approach 1 square meter accuracy, this kind of accuracy is not required for most SAR operations. As such, you may have learned to report the middle 3 digits. For example, you would report 748 734. This would give 100 square meter resolution. That is, it defines your area as falling within a 100 meter square. For most SAR work, this is probably sufficient. If you need 10 square meter resolution, then you will need to add a digit to each set. 7487 7349. Truncating the output from the GPS has the advantage of making radio transmissions shorter. It takes much less time to say "748 734" than "11 S 0474876 3773492". This is especially helpful when there is interference on the radio frequency where several repeats of information are required. Trun-

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Caving in Big Bear

Matthew Sheasby, Cave Rescue Team

In mid-May, the Cave Rescue Team hosted an Introduction to Cave Rescue Course presented by the National Cave Rescue Commission. Those attending included members of San Bernardino

bottom ran a shallow stream which kept everything nice and wet, with the occasional view towards sunlight from fist size holes between the massive boulders.

Imagine communications which require you to string a wire from phone to phone. Could it be that the process of setting up communications is in fact more difficult than the rescue itself? This question was answered as I squeezed through a hole barely large enough for my small frame, and quickly realized that we would have to maneuver someone, strapped to a spinal splint and stretcher through this same space. The rescue was unbelievably difficult, especially for a first timer like myself.

The OSS or Oregon Spine Splint is a low profile splint that immobilizes the neck and spine while not increasing the width of the body. Around this lives the stretcher. Nothing like the metal rigid cages, which are normally used, but a body sized plastic sheet that rolls up on all four sides to make it extremely low profile. It is with this that the patient is twisted around to squeeze through small crevices, his nose a 1/4 inch away from granite, with everyone arms overextended. One specific lesson learned by the patient was how much he appreciated, as a patient, being asked if he was "ready" to be moved. The little things can re-instill a feeling of control even though you have none.

The patient made it, mostly unscathed, (fortunate since he started the process perfectly healthy) probably more appreciative of open space, and with an increased appreciation for the plight of the truly injured moving through rock and space like a human burrito.



County SAR teams as well as interested parties from the community. The two-day session took place in Big Bear, a mile or so from the lake

on a beautiful spring weekend. The weekend had the requisite classroom time on Saturday, with an always pleasant review of the Incident Command System and the basic paraphernalia specific to cave rescue. Saturday progressed to the practical application of basic equipment, and culminated in a mock rescue on Sunday at Elsie Cave.

Elsie is a short, 300 foot long narrow rock fall cave, which resembles more of a squeeze than anything else. Through the



GPS

Continued from p. 4

cating the position provided by the GPS, however, also introduces confusion. Folks don't often remember which digits to drop, and can drop or report the wrong ones. One way around this is just to report the last 5 digits of each. This will provide ample resolution and reduce the radio traffic a bit. Probably the best thing is just to announce the easting and the northing rather than reading it as a single string. This alone will clear up confusion regardless of the format that you choose to report. Remember, the easting comes first, then the northing (your GPS will probably tell you which is which). In this fashion if you report them out of order the command post can still sort out where you are. Adding the simple "north" and "east" to your radio transmission won't take much airtime, but it will go a long way to helping the command post understand where you are. In the example above one could say, "748 east, 734 north", or "7487 east, 7349 north". This alone can alleviate much confusion.

Fourth, having the proper equipment – As we are all volunteers, we have many brands and models of GPS. It would be impractical to try and get all the GPS's to match for the county due to the budget crisis and the volunteers smaller pockets. Therefore, when reporting to a search, if you have interface cables for your GPS, please bring them! As this may not be practical make sure the team you are on for a search has at least one GPS with interface cables. You can leave the cable with the Operations person who will record the GPS data, you don't have to take it out in the field, but don't leave it back at the station or at home! If you don't have a cable for any GPS being fielded, please let Operations know. There might already be a cable available for your GPS. Garmin is well covered, just so you know!

The GPS that has the cable available, either one you have brought or one that Operations already has, will be the one that you will use to track your position. Please

set your tracking to plot a point every 15 minutes (if you are able to set your GPS for this feature) and not every 5 minutes. Many GPS units are incapable of changing this setting, and if you cannot, that is OK. This provides an easier to read plot when your data is downloaded. If you are unsure of how to change this setting be sure to check with Operations before you leave for your assignment to get assistance.

Lastly, you will need to make sure you start your routing at the point where your assignment starts. If you are instructed to 'search on your way' to your assigned starting point, i.e. keep your eyes opened as you drive to your spot, then start your routing from where you start you driving. But set your GPS to save this tracking information by assigning a new name, so that you don't have a track the includes your trip to Yosemite, then a track point straight back to your friends house, then over to the command post of last week's search, etc. This will help when you download the data at Operations to keep only the search route on the map, otherwise the map will zoom out to accommodate your Yosemite trip. Remember the name of the routes you saved so that Operations can only download those routes. Your GPS will loose contact with the satellites (nature of our search areas) so you will frequently get route fragments, this is OK and is still useful to Operations.

In summary, using these techniques even when on searches with other counties will help you be more efficient on your search, help you to spend more time looking and less time on the radio with Command and will provide valuable information to Operations in determining how well the search area has been covered while the initial search is still underway. ☐

Calendar

For information or to submit an event, contact the editor at editor@thetracker.info. Appearance of items in this section does not necessarily imply endorsement by the SAR Council or the County of San Bernardino. Call if you have any questions about a particular listing. To save space, persons to contact and numbers for multiple listings of *Department-approved training providers* are consolidated in one place at the bottom of this page.

June

June 12-13 & 26-27—Technical Rescue Basics Course (TRBC)

Contact Don Welch (760-244-7340) for more information.

June 4-6—Swiftwater Team Leaders Course, National Outdoor Leadership School

Thermopolis, WY. You need to either be a boater or in excellent shape to take this course. Contact john_gookin@nols.edu for more information.

June 2-5—NASAR '04 Conference & Expo

"Life, Liberty, and the Pursuit of Lost People", Lansdowne, VA. Visit www.nasar.org for more information.

June 5—West Valley SAR ELT Training

Night operation. Contact Bob Gattas (rgattas@earthlink.net) for more information.

June 19—West Valley SAR Rope Training

Contact Bob Gattas (rgattas@earthlink.net) for more information.

July

July 21—Inland Empire SAR Council

19:00 in the Main Conference Room at SBSB HQ

July 25—Personal Vertical Skills Check-off

Hosted by West Valley SAR at Rialto Airport. Contact Bob Gattas (rgattas@earthlink.net) for more information.

August

Aug. 21—Rope Training

Contact Bob Gattas (rgattas@earthlink.net) for more information.

Aug. 25—Central SAR Fundraiser

An evening at the Improv. See www.thetracker.info/calendar for flyer.

September

Sep. 15—Inland Empire SAR Council

19:00 in the main conference room at SBSB HQ.

Sep. 18—West Valley SAR Search Scenario

Contact Bob Gattas (rgattas@earthlink.net) for more information.

Sep. 22-26—Direction and Control of the Search Function

Hosted in Yosemite. See www.thetracker.info/calendar for a flyer.

October

Oct. 1-3—Morongo Basin Search and Rescue Desert Run

For more information call 760-369-9999, or visit www.desertrun.org

Oct. 9-11—SAR City

Oct. 16-23—National Cave Rescue Commission (NCRC) Level I and Level II Cave Rescue Seminar

Week-long NCRC seminar at California Caverns, CA. Contact Mark Kinsey (mkinsey@caverescue.net) for more information.

Oct. 16-17—West Valley SAR Map & Compass Training

Contact Bob Gattas (rgattas@earthlink.net) for more information.

November

Nov. 17—Inland Empire SAR Council

19:00 in the main conference room at SBSB HQ.

Nov. 20—West Valley SAR Night Scenario

Contact Bob Gattas (rgattas@earthlink.net) for more information.

*Course / Provider

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CMC Rescue School
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TRBC, PVSC, NCRC / Vol Forces
Mountaineering / Vol Forces
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BMC

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Of course learning has its fun moments! These trainings rarely go without snow ball fights, creative concoctions cooked up over a stove and outrageous abodes built of snow. Most every attendee discovers the distinction between survival and comfort. The packs grow heavy in response.

The instructors come from many San Bernardino SAR teams. They start 5 months before the November lecture; discussing, organizing and preparing the course. They also come from many outdoors backgrounds: ice climbing, high altitude mountaineering and ski patrol, to name a few.

Given the degree of danger of the San Bernardino mountains in the winter and the huge population within an hour's drive, the importance of Winter Alpine BMC can not be overstated. All SAR personnel are encouraged and welcomed to join us this November.



Classified Section

Contact the Editor to place or remove any item.

SBSD Commuter cups with star and motto. \$16. Features generous 16 oz. capacity, stainless steel construction, double-walled insulation and fits virtually all auto cup or mug holders.



SBSD Search and Rescue decals. \$5. The decals are 3.5" X 3.5" and can be stuck on the outside of just about anything or on the inside of a window. The price is \$5.00 each and can be purchased by contacting SarDesertRun@aol.com or calling 760-369-9999.

Earrings (1/2") \$10 and **Lapel Pin/Tie Tacks (5/8")** \$8. Fund-raiser for Morongo Mounted SAR Team. For ordering info contact Kim Miller at millerkm@29palms.usmc.mil or call Kim at (760) 367-1148 or (760) 367-1148 evenings.



SBSD Coffee cups \$5. High-gloss ivory coffee cups with gold-colored SBSD star on the side is microwavable. Available at Volunteer Forces.

SBSD SAR Pens \$10. High-quality, refillable ink pens with SBSD star and "Search & Rescue" on side. Great gift idea! Available at Volunteer Forces.



Custom SAR/Expedition Topo maps. \$14.95. See the web site for full details!

Granite Gear Nimbus Ozone Backpack. Size regular. Highly adjustable, and brand new. Comes with large shoulder straps, but Granite Gear will swap them for one your size is they don't fit. \$105. Contact Jeff Lehman at jlehman@caverescue.net.

Garmin Offers NASAR Members Discounts. NASAR has an agreement with Garmin to distribute its entire line of consumer GPS products and a handful of its aviation products to the SAR community. Join NASAR at www.nasar.org, and shop the store at www.nasar.org/garmin/default.php.

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