

## Getting Location Information from Cell Phone Companies

### CDMA Companies Such as Verizon and US Cellular

Specific Information to ask for:

1. Tower GPS – to map the tower
2. Azimuth of Sector Used – the compass heading/direction the antenna is pointing
3. Horizontal Beam Width of Sector Used – the width in degrees of the signal from antenna
4. Distance Measurement – Round Trip Delay/Per Call Measurement Data - measurement from tower in miles

***It is very common for companies to provide a GPS coordinate, estimating location of the phone.***

***The GPS location given by the company should always be checked but can often be misleading.***

### **Verizon Wireless RTT Report and Round Trip Delay Disclaimer:**

**The latitude and longitude measurements on the Real Time Tool “RTT” report are derived solely from the Round Trip Delay measurement. They are best estimates and are not related to any GPS measurement. Measurements with a high confidence factor may be more accurate than measurements with a low confidence factor, but all measurements contained on this report are the best estimates available rather than precise location.**

Any Mapping Software can be used. Google Earth works well but recently I found Caltopo to be more precise and much simpler/faster to use.

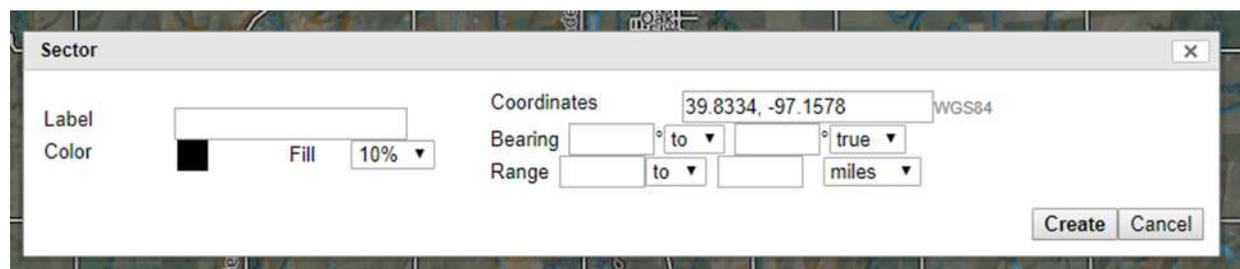
Get appropriate information from the service provider

Go to [www.caltopo.com](http://www.caltopo.com)

In the upper left hand corner click on Add

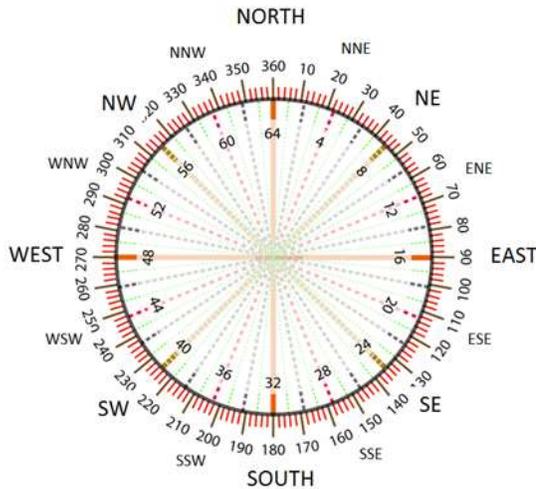


1. Click the option for Sector and see the dialog box

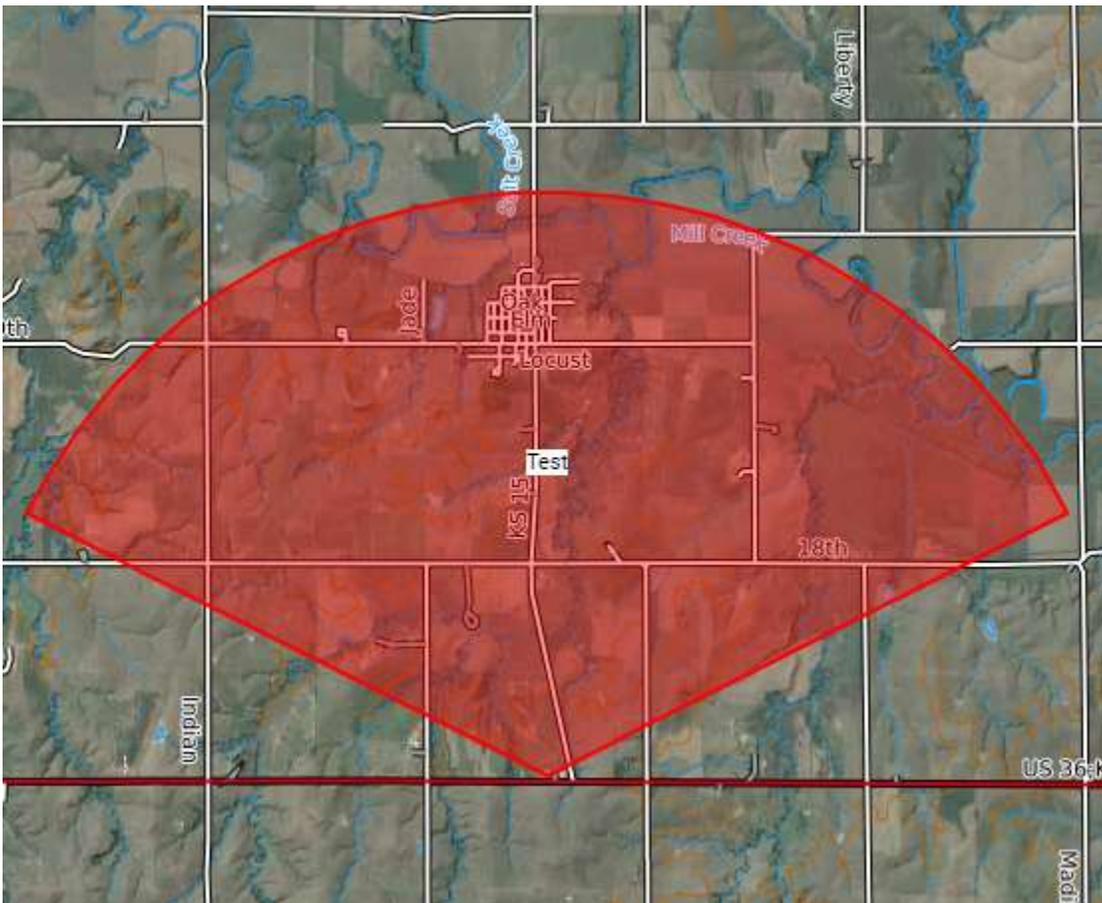
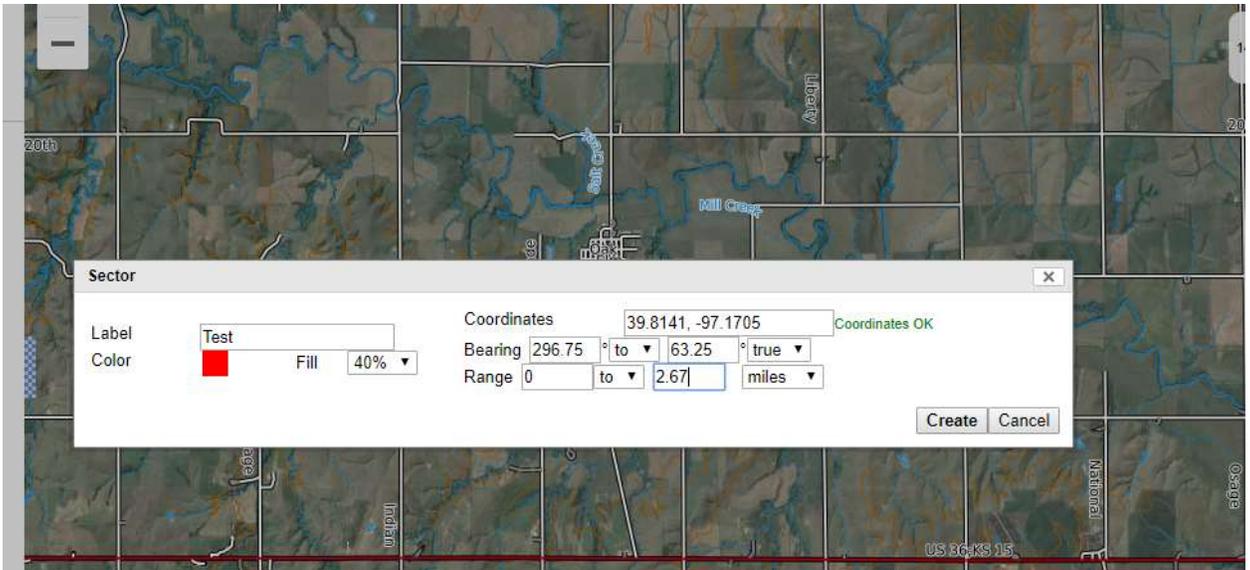


2. The “label” section is merely a name for your arc you will plot – I would use date/time of “ping”
3. Select a visible color and set the opacity – the higher the fill % the darker the sector
4. In the “coordinates” section enter the coordinates of the TOWER that were provided

5. The “bearing” section requires a bit more attention
  - a. First you must know the azimuth of the sector you are working with
  - b. You must then add/subtract the beam width from the azimuth
  - c. Understand that you are working on a compass heading i.e. with 360 degrees
  - d. Example: Azimuth of sector 1 = 0 degrees, Beam Width 63.25 degrees, tower located at 39.8141, -97.1705 distance measurement of 2.67 miles.
  - e. If the azimuth is 0, as in the example, then you must add on the beam width of 63.25 to get a heading of 63.25 degrees, one side of your sector
  - f. You must then subtract the same beam width from the azimuth
  - g. The azimuth of 0 is the same as 360 degrees, thus subtracting the beam width gives us a heading of 296.75 degrees, the other side of your sector
  
6. These measurements will need to be entered into the “bearing” section. Be careful to enter them in “clockwise” fashion. Azimuth - beam width, azimuth, azimuth + beam width. This part can be difficult to grasp for those not familiar with compasses and/or headings on a map.



7. The range section is where you will enter your distance measurement
  - a. The first range is entered as 0, meaning begin measurement from the tower
  - b. The second range is entered as your distance, in the example 2.67 miles
  
8. Once completed click “create” and you have plotted the entire arc to be searched.

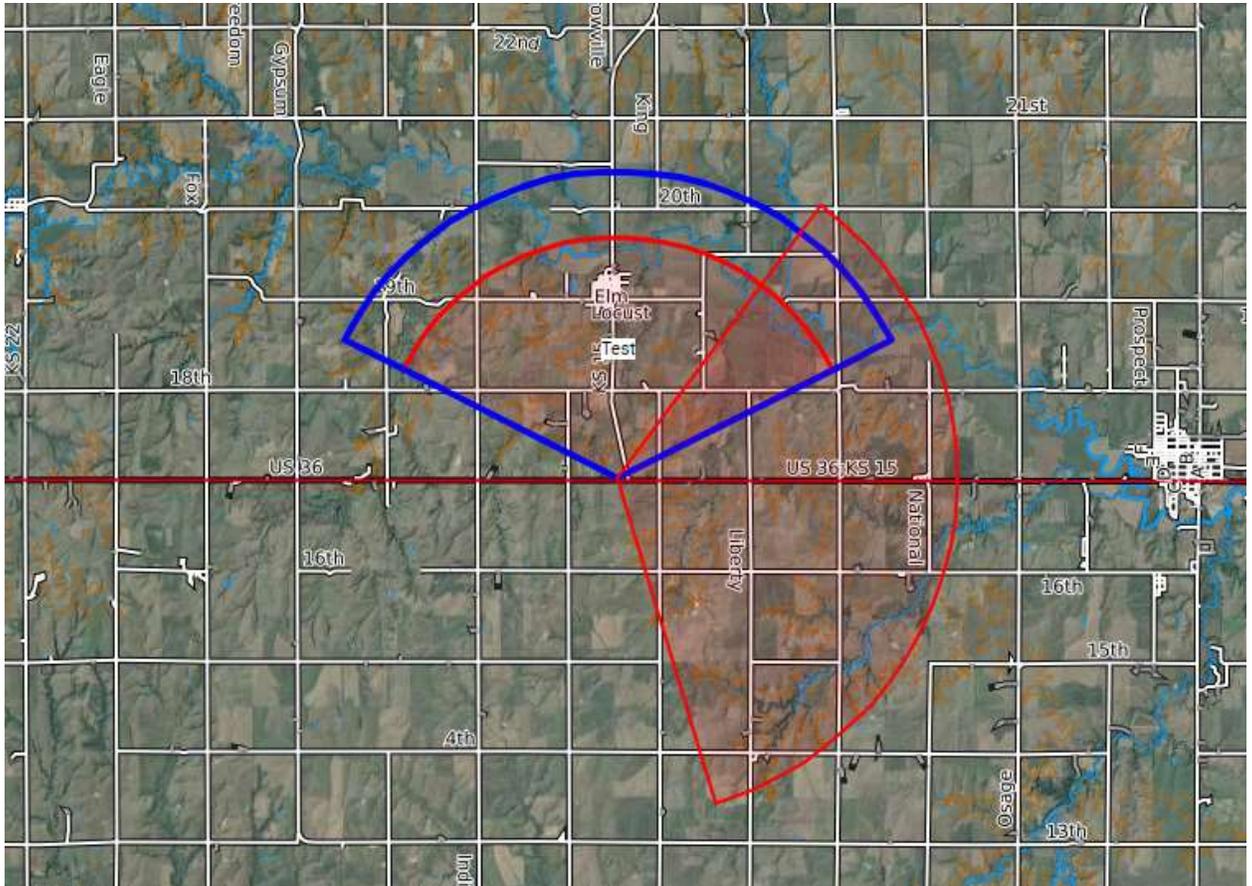


The resulting arc is the entire search area. The target phone can be found **anywhere along the arc.**

It is important to remember that the information is NEVER exact.

The information is also often quite limited. Most times it is important to take into account everything else you know about the missing person, including direction of travel and last known whereabouts.

You must call in for updated location information. Depending on circumstances this could be anywhere from every few minutes to every few hours. If the location information changes keep the previous plotting and plot new, this can indicate directional travel.



The innermost red arc would be first measurement, then blue arc then the further red arc which shows a change in sector. Taking all those pieces into account would be consistent with a target phone traveling in a NE direction away from the source tower. However, that is also not the ONLY possibility, remember anywhere on the arc.

There is a lot more a person can get into, but I would strongly suggest more training and education before getting too deep into the technical side of things.

Also, if the information is coming from a different company, such as AT&T, that uses GSM technology the process will be different. Most often the location information consists of a specific GPS point with an "accuracy" statement. These are much easier to plot but given the coverage in our rural areas, not often encountered

Plotting one of these measurements can be done in caltopo under “range ring”. Simply put in the supplied GPS point and set your range to the given accuracy statement. For example “location likely accurate within 600 meters”



One of the most important things to remember is that the information is never exact. This means that any part of the covered area, whether along an arc or inside a range ring, is “in play”. This can often be a tough thing to remember. We tend to make judgements such as “they never would have driven down that road, it doesn’t go anywhere”. Until proven otherwise we have to consider all options and check them all out.

As mentioned before, it is also important to take every piece of information you know about the missing person into account. Things like; last KNOWN location, direction of travel, commonly taken routes, family/friends in the area, mental health status, etc. Taking all of these pieces together with cell data can often provide insight for areas to search.

A final point to mention is that we are not mapping out cell phone coverage. We are simply using the measurement data provided by the carrier for this specific instance. It is way too easy for a person to get in over their head in this area, setting everyone up for bad juju. The best option is to stick to the basics and if a question ever arises find a person with more knowledge in the topic to help out.

Contact information for nearly any cell phone service provider can be found at [www.search.org/resources/isp-list/](http://www.search.org/resources/isp-list/)