Where Am I? – Location Tools for Contesters

Last spring, I became involved in helping refine the Potomac Valley Radio Club's definition of its club circle (the 175-mile radius within which Unlimited club members must reside in order to have their contest scores count toward club competition). I thought maybe others would be interested in a quick run-down on the tools we found and used. Many thanks to Mark, KD4D for introducing me to the subject and holding my hand through the learning process.

A critical first step is getting a precise location for each station. The easiest thing to do, if you have the tools, is to take a GPS reading. However, many of us do not yet have GPS units, so then what? My first attempt at this was to look myself up on www.qrz.com, but the coordinates found there are for the geographic center of a licensee's zipcode area, as defined by the Postal Service. In my case, the location shown was almost 4 miles from my QTH.

A word here about units. The most common formats for latitude and longitude are generally defined as DD.DDDD (decimal degrees) and DD MM SS (degrees, minutes and seconds). Some systems also use DD MM.MMMM. DD MM SS coordinates normally use letters to denote the sense of the coordinate (N for latitude and W for longitude, in the US) An example would be 37 14 42N, 77 45 23W. Decimal degrees can use either letters or a minus sign to denote South latitudes and West longitudes (39.7745, -79.8845, for example). There are handy converters from one format to another at www.gpsvisualizer.com (more on this great web site below).

Using "geocoding" services available on a number of web sites, including you can often get a pretty fair location by entering a physical address (no P.O. boxes or Rural Route box numbers, please). However, in my case, it turns out that most geocoding databases think that my address is really my neighbor across the street, while some can't find my new physical address at all.

Next stop was www.topozone.com, where, after a little fussing around, I was able to find the 1:24,000 USGS topological map of the area where I live. This was familiar, because years ago I had gotten the paper version of this map for some early terrain analysis.

With Topozone's tools I was able to place the cursor right on my house, and read out the latitude and longitude. However, I knew that the map was not up to date, because it only showed my house, and not the ones that were built nearby in the 1990's. The road layout also reflected an earlier era.

Fortunately, there are a variety of on-line services available with more up-to-date information. So far, the most current aerial photographic data I have found for my QTH is from Yahoo Maps Broadband (http://maps.yahoo.com). The pictures are clear enough that I can count trees in my front yard. I found that the geocoding

database had my house number assigned to my neighbor's house (Figure 1, point A), rather than at the end of my gravel drive. When you click on a point on the map, aerial photo, or hybrid displays, the latitude and longitude are found in the URL. Google Maps (as well as Google Earth) and Microsoft Virtual Earth 3D (another free service) are other options, depending on whether they have good-enough imagery of your QTH.

Sometimes, you may discover that the same point on an aerial photograph or map will give slightly different coordinates, depending on the service that is used. Typically, the difference will be only a few tens of feet, but for the best confidence, you need to know what "geoid" the map uses, and make sure you always use the same one. Over the years map-makers have progressively refined their mathematical models of the Earth, which is a slightly flattened sphere. It is this model, or geoid, on which the grid of latitude and longitude lines is actually superimposed. Many of the older USGS paper topo maps used a 1927 geoid, while GPS systems and many newer maps use the WGS 84 (1984) standard. GPS systems use the latter, which makes it a good one to settle on.

Anyway, once you know for sure where you live, it should be relatively simple to figure out whether you are inside or outside your club's circle, so long as you know the coordinates of the center. A nifty graphical means of doing this (and double-checking your location at the same time) is to use Google Earth. This is a downloadable free program (http://earth.google.com/download-earth.html) with

truly amazing capabilities. It can easily locate any point or set of points on the earth from coordinates, and zoom in, down to the largest scale for which it has imagery. The one thing it won't do (in the free version) is to draw a circle of a given size around a point. To do this, you need to use another free web site, www.gpsvisualizer.com , which has a dazzling array of calculators and other mapping tools intended for use with GPS. It will help you draw a circle of any size you want and plug it directly into Google Earth.

GPSVisualizer will also allow you to measure the distance between any two points with high accuracy, simply by inputting the coordinates, so if you know the coordinates of your club circle's center, you can simply plug them in, together with your coordinates, and read off the distance in miles or kilometers.

Using the tools I've described and transferring the data to Google Earth, it was fairly easy to plot all of our members' locations and determine which are inside our club circle and which outside (Fig. 2). Now we know, for sure!