313: GPS Coordinates

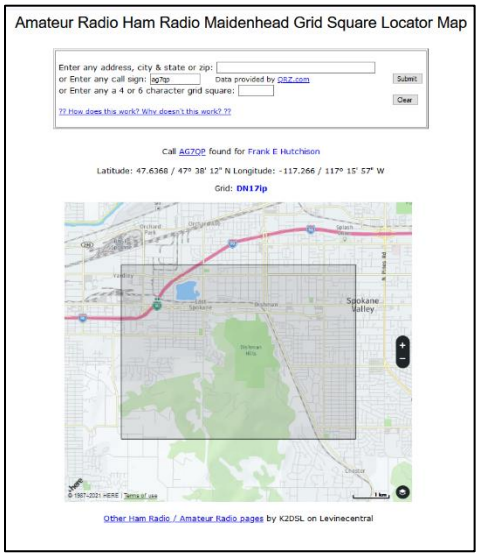
NOTE: Spokane County ARES/ACS uses **Decimal Degrees** in its records.

Spokane and Kootenai County Dispatch will accept position data in any format given because their software will automatically convert it to what they need.

GPS Coordinates (Latitude and Longitude) are expressed in these two most used formats:

1. Degrees, Minutes, Seconds
2. Decimal Degrees

For example, using the website: https://www.levinecentral.com/ham/grid_square.php, and entering either your Call Sign or address, one gets results shown to the right ➔.



The Latitude and Longitude on this website are given in both Decimal Degrees and Degrees-Minutes-Seconds. In addition, you are given your 6-character Maidenhead Grid.

In this case, using AG7QP, the results are:

	Decimal Degrees	**Degrees-Minutes-Seconds**
Latitude:	47.6368	47° 38' 12" N
Longitude:	-117.266	117° 15' 57" W

Convention is that North Latitude is positive while South Latitude is negative; East Longitude is positive while West Longitude is negative.

You can use the website: https://www.directionsmag.com/site/latlong-converter/ to convert from one system to another.

How to Convert Decimal Degrees to DMS

Follow these steps to convert decimal degrees to DMS:

1. For the degrees, use the whole number part of the decimal.
2. For the minutes, multiply the remaining decimal by 60. Use the whole number part of the answer as minutes.
3. For the seconds, multiply the new remaining decimal by 60,

Example: Convert decimal degrees 156.742 to degrees minutes seconds

- The whole number is degrees. So, 156.742 gives you 156 degrees.
- Multiply the remaining decimal by 60.
- 0.742*60 = 44.52, so the whole number 44 equals minutes.
- Multiply the remaining decimal by 60.
- 0.52*60 = 31.2, so the whole number 31 equals seconds.
- Decimal degrees 156.742 converts to 156 degrees, 44 minutes and 31 seconds, or 156° 44' 31".
- Be sure to follow math rules of rounding when calculating seconds by hand. If your resulting seconds is something like 31.9 you may round up to 32.

From <https://www.calculatorsoup.com/calculators/conversions/convert-decimal-degrees-to-degrees-minutes-seconds.php>

How to Convert DMS to Decimal Degrees

Decimal degrees = Degrees + (Minutes/60) + (Seconds/3600)
For example, to convert 39° 25' 30" to decimal degrees.

1. First, convert minutes and seconds to their degree equivalents and add the results
   25'/60 = 0.4167°
   30"/3600 = .0083°
   and 0.4167° + 0.0083° = 0.425°
2. Then, add this number to the number of degrees.
   39° + 0.425° = 39.425°
3. So, the final result is:
   39° 25' 30" = 39.425°

From <https://support.goldensoftware.com/hc/en-us/articles/228362688-Convert-Degrees-Minutes-Seconds-To-Decimal-Degrees-in-Strater>

Additional information about the Global Positioning System (GPS), and the Geographic Coordinate System can be found on Wikipedia:
https://en.wikipedia.org/wiki/Global_Positioning_System
https://en.wikipedia.org/wiki/Geographic_coordinate_system