Latitude/Longitude Position Conventions

When luck prevails, a distressed vessel operator may have a GPS, Compass, Chart and the Local Knowledge to provide SAR responders with accurate location information.

Should we get a Lat/Lon, it is prudent to be familiar with the different ways a Latitude and Longitude can be reported. Trying to make one format work for another will put us off the mark and waste valuable time.

Degrees, Minutes, Seconds (DMS):

- This is the format we learned in grade school. Works well but is not generally used on nautical charts.
- Channel Underpass for Wright Memorial Bridge

Latitude: 36° 05' 01" N Longitude: 075° 45' 25" W

Degrees, Minutes, tenths of minutes (DM.m):

- ***USCG and USCGAUX will use this format for radio comms.***
- ***SAR LKP/CSP positions will be in this format.***
- Using this convention, The WMB Underpass position would look like this.
- Latitude: 36° 05.02' N Longitude: 075° 45.45' W

An Example of a Format Error: If Degree, Minute, Tenths of Minute (DM.m) were read as DMS (the decimal point is very important), the Longitude would be off by about half a minute or, 1000 yards (approx ½ nm)

Degrees, Minutes, Seconds, Tenths of seconds (DMS.s)

- Used for the USCG Light List. (0.1" = about 12 inches)
- This convention is also the default for Google Earth (lower right corner)
- Using the WBM Bridge position

Latitude: 36° 05' 22.01" N Longitude: 075° 45' 19.92" W

Degrees, Tenths of Degrees (D.d)

WBM Bridge

Latitude: 36.08361° N Longitude: 075.75694° W

(Now they're just trying to show off!)

Format Comparison:

- DMS: 36° 05' 01" N 075° 45' 25" W
- DM.m 36° 05.02' N 075° 45.45' W (USCG SAR Format)
- DMS.s 36° 05' 22.01" N 075° 45' 24.92" W
- D.d 36.08361° N 075.75694° W

Please note the characters (", ', °) and the decimals. Both are required for accurate communication of position.

Google Earth ATON (Federal aids to navigation) and PATON (Private aids to navigation) Light list Overlay

- Download or Open Google Earth
- Open This Website: http://www.wb3v1.com/Division%2012/DIV12-LIGHT%20LIST%20-%20LOCAL%20NOTICE%20TO%20MARINERS%20INFORMATION-WOW.htm
- Click on "District 5"
- Select and click "Open with Google Earth"
- You will see your GE screen explode with symbols for all Nav Aids in District 5. Zoom in to familiar waters to unclutter.

- That's ALL aids in D5. You can turn either Fed or Private aids off in left column
- Click on a Nav Aid for information
- Toggle Nav Aids on/off on the left.

How Accurate is My GPS?
"On May 11, 2016, the global average URE (User Range Error) was ≤0.715 m (2.3 ft.), 95% of the time".
https://www.gps.gov/systems/gps/performance/accuracy/

1°	=	60 nm
1'	=	1 nm = 6000 ft
1"	=	100 ft
0.1"	=	10 ft
0.01"	=	1 ft

There are several Lat/Lon Conversion Apps are available online. This is just one:

(https://www.directionsmag.com/site/latlong-converter/)

Conversion apps available @ Google Play and the Apple Store.

A lat/lon time saver:

- As soon as you have a lat/lon for the LKP/CSP, compare your current lat/lon with the target lat/lon
- If Latitude is greater than your current position, target is North
- If Longitude is greater, target is West
- Initial heading is NW
- While underway, 1st mate can enter the lat/lon into gps for more accurate target location. Valuable minutes saved.
- If Lat is less than current position, target is South
- If Lon is less than current position, target is East
- Initial heading is SE

Here's something you can tape to the console:

If Target Lat/Lon is:	+ +	Head NW
	+ -	Head NE
	-+	Head SW
	- -	Head SE