

GPS Use in Racing

Bob Sardo

- A Global Positioning System receiver converts timed signals from an array of satellites to a position on the earth. Software within the GPS receiver converts changes in position to "Speed Over Ground" (SOG) and "Course Over Ground" (COG).

- When combined with waypoint positions or position targets a GPS receiver will calculate and track the following:

Course / Bearing to the target (BRG)

Distance to the target (Dist)

Velocity made good toward the target (VMG)

- These three values are the basis of navigating to any destination. They can also serve to help you improve your sailing efficiency during a race. They can help make decisions on when to tack or gibe. These values can usually be displayed on the GPS as part of a navigation screen so they can be seen without needing to handle the instrument.

Velocity made good, VMG, will clearly show the preferred tack. The better VMG to the mark will be evident. This could be due to more speed, pointing more efficiently or unseen forces such as current. Knowing the preferred tack will help you manage your tacking strategy.

Observing course over ground, COG, and bearing to mark, BRG, can help identify when you are approaching the lay line. Knowing your boat's tack angle will show as you approach or sail beyond the lay line. If your unit displays this information in a graphic format observation and recognition will be easier.

Wind shifts affect your sailing angle. Headers and lifts will show clearly how they change course over ground, COG, bearing to the mark, BRG, and velocity made good, VMG. They give visual information and will help decide if and when to tack. This is useful information on both up or down wind legs.

- To use the GPS effectively you need the position, Latitude/Longitude, of race marks setup as waypoints. This is easier on courses that are set with government marks or when the positions are given with the Sailing Instructions. Waypoints need to be entered carefully. The positions should be checked against a current chart for accuracy.
- Use the waypoints to build a route of the race course. If the start / finish line is not given in the SI's slowly sail across or luff at the line prior to the start and save the location as a waypoint. Insert it into the route to make the course complete. You may need to enter it as the first and last waypoint in the route.
- When racing in long distance races, your planned course or race marks can be entered as routes. Depending on your race strategy and wind conditions you can sail a tight course line, keeping within a maximum distance of the course line to the next mark. You can also search for wind while keeping track of your progress and work to optimize your VMG to the next mark.
- As experience is gained using a GPS, you will work out techniques and screen displays that fit your needs and sailing style. Some brands and models of instruments may not provide what you would like to see displayed. Check out what is on the market and what other sailors are using. I use a Garmin GPS 76. It is small, powerful and effective. I could only want a larger display to make it easier to read from a distance.