



## Ex 6 – Using GPS - Answers

### Ex 6 USING GPS – ANSWERS

1. a) Causes of possible problems include: power failure, damage to aerial, transmissions from mobile phones, changes to or interruption in the signals from the satellites. b) Skipper should record position in logbook and plot it on chart at regular intervals. GPS navigation should be backed up from other sources.
2. a) Course over the ground. b) Speed over the ground. c) Waypoint.
  - d) Cross track error is the distance that craft has deviated from original track because of tidal stream, the wind, inaccurate steering or from any other cause. The heading given by the GPS is always from the present position to the waypoint, in a straight line, taking no account of tidal streams or hazards.
3. Direction and distance to a waypoint is quicker to plot than latitude and longitude and easier, especially on a folded chart. The waypoint can be the centre of a compass rose or a prominent cross of latitude and longitude rather than a point on the route. Using a waypoint web or a cross track error ladder.
4. No. The direction on the GPS display does not take into account the tidal stream.
5. a) See trace b) Yes d) No. The GPS calculates the position and usually displays this as latitude and longitude. The display showing direction and distance to the waypoint is based on this. Assuming that the waypoint has been put in correctly, the position will be the same.
6. a) Yes waypoints are suitable and route is safe. If boat is travelling at speed, at night or in poor visibility it may be safer to put waypoint adjacent to a buoy rather than use buoy itself, especially an unlit buoy.
  - b) Stop the boat and work out what has gone wrong.
  - c) Waypoint 3 has been put into the GPS incorrectly with the longitude as 005° 55'.10W instead of 005° 51'.50W. When the route was set up on the GPS the direction and distance from one waypoint to the next should have been checked from the chart. Another crewmember could check input.
  - d) Yes. The GPS is calculating the latitude and longitude correctly but the direction and distance to waypoint 3 was wrong because the position of the waypoint had been keyed incorrectly. The set was giving the direction and distance to the wrong place.

***The waypoints should be plotted on the chart and the direction and distance between them checked against the information displayed on the GPS. They could be checked by another crew member-***

Please consolidate this information by using the RYA e-nav disc and tutorial