



World Sailing

Guidance on Racing Around Waypoints

1. General

- 1.1 World Sailing has approved Appendix WP which provides additional and changed rules to enable racing using waypoints as turning or passing points in a course. To use these rules Appendix WP must be invoked in the notice of race and sailing instructions.
- 1.2 Appendix WP can be downloaded from the World Sailing web site at <http://www.sailing.org/documents/racingrules/experimental-rules.php>.

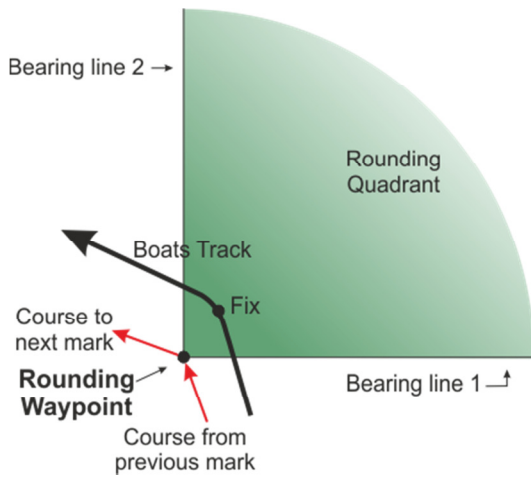
2. Introduction

- 2.1 For good competition, race committees for offshore races will often want to set a mark where no fixed buoy exists, and where the laying of a mark specifically for that race will be impractical or expensive.
- 2.2 Electronic Position Fixing Systems (usually GPS) are reliable and inexpensive; they are required equipment for races of OSR Category 3 or higher.
- 2.3 This raises the possibility of using a geographic position (waypoint) as a rounding or passing point in a course, employing electronic position fixing technology to provide evidence that the boats have sailed the course as required. Such a waypoint is intended as a substitute for a mark.
- 2.4 The use of waypoints requires changes to the rules for several reasons:
 - (a) A waypoint is not a physical object.
 - (b) Electronic position fixing does not provide an absolute confirmation of a boat's position at any point in time.
 - (c) Boats approaching a waypoint may have different, equally valid, perceptions of each other's position relative to the objective position of the waypoint.
 - (d) RRS 18 and RRS 28.2 cannot apply unchanged because a mark is defined as an object.
- 2.5 Appendix WP amends rule 28 and provides new rules and definitions to address these issues.

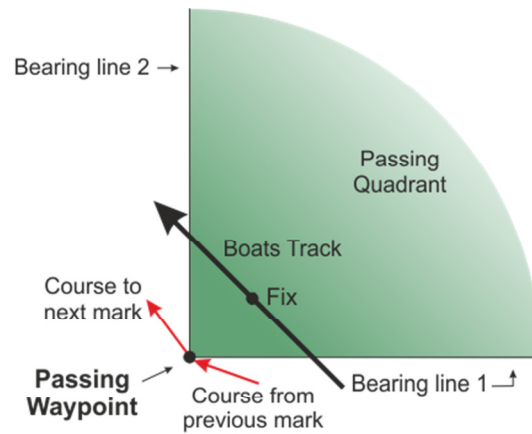
3. Proof of Sailing the Course

- 3.1 When boats meet at a physical mark, simple visual evidence is usually available to confirm to one boat that the other has rounded or passed correctly. Because no such direct evidence is available at a waypoint, the race committee may wish that boats should be able to show that they have left the waypoint on the required side.
- 3.2 Such evidence may be obtained in many ways, depending on the equipment installed on the competing yachts. Basic equipment may not have the ability to record a detailed track of a boat's position.
- 3.3 When it is likely that some boats in the fleet will have only simple position fixing equipment, a recommended mechanism is to specify a "passing quadrant" associated with the waypoint as shown in the following diagrams. A boat is deemed to have passed the waypoint on the required side if she provides a GPS fix that lies within the associated quadrant.
- 3.4 This mechanism is not essential for the use of Appendix WP; other approaches will be appropriate for events in which more sophisticated equipment is available.

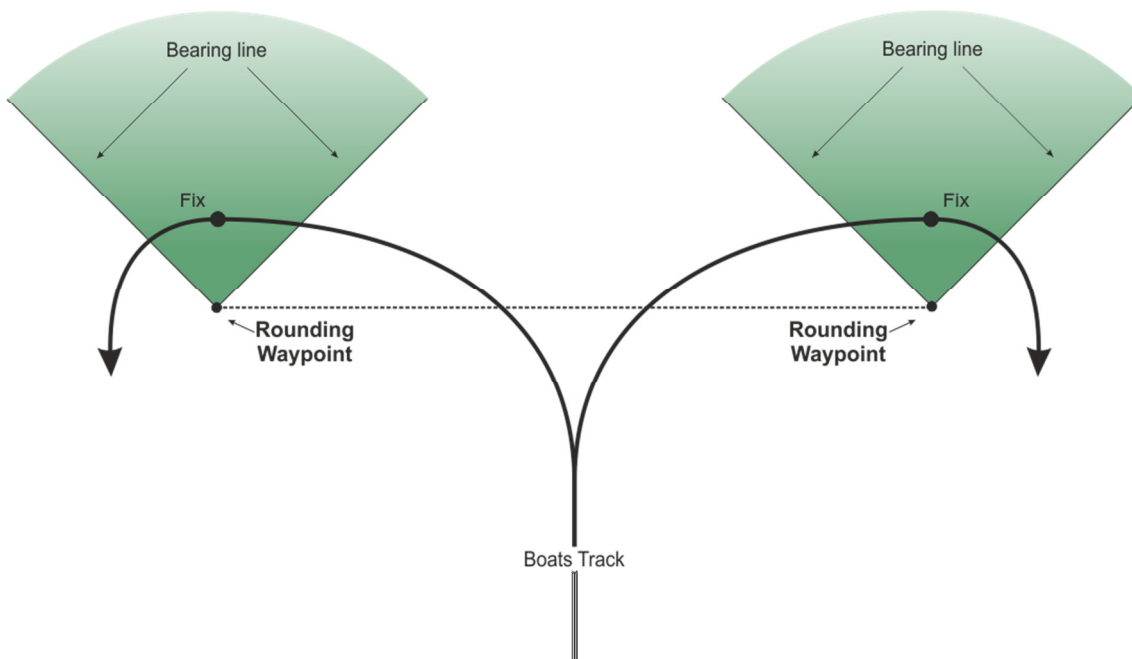
Rounding Waypoint



Passing Waypoint



Waypoints as a Gate



3.5 A recommended sailing instruction is as follows:

Each waypoint has an associated rounding/passing quadrant defined as the area enclosed between two bearing lines (with 90° between them) extending from the waypoint. The bearing lines are specified with each waypoint designated in these sailing instructions. A boat that provides a valid GPS fix within this quadrant is deemed to have rounded or passed the waypoint on the correct side.

4. Recording

4.1 As the proof of sailing the course relies on electronic fixes, a means must be provided of recording fixes and the times at which they were taken. There are many ways in which this could be done:

- (a) The boat's GPS/Plotter can record the boat's track, from which fixes can be extracted;
- (b) A tracking system may be used to record the boat's track;
- (c) A dedicated GPS logging device may be used to record the boat's track;
- (d) A photograph of an instrument displaying the fix;
- (e) Consideration should be given to the impact of recording fixes on the handling of short-handed boats.

Note: because two GPS receivers located on the same boat may show different positions for the boat, data derived from the receiver used as the boat's primary navigation system should take precedence over other GPS data in determining whether or not a boat has sailed the course correctly. This is particularly important when logging systems are used to which the boat has no access for navigational purposes. See Appendix WP4.

5. Reporting

- 5.1 This will depend on the requirements of the organising authority, noting that in races around physical marks it is not usual to require more than a written declaration that the boat has sailed the course in accordance with the rules. Onerous reporting requirements may discourage competitors from entering the event.
- 5.2 Possibilities include:
 - (a) Requiring the boat to retain the original record of the fix until it is called for by the race committee (either as a partial sample, or required from all boats) or by the protest committee in the event of a protest for not correctly rounding or passing the waypoint. A reasonable time limit should be set.
 - (b) A positive requirement to lodge the record of the fix with the race committee. This could be combined with other reporting/declaration requirements. Such fixes could be published on the notice board or event website to help avoid unnecessary protests.
 - (c) Installing a position-logging system provided by the organizing authority, to be accessed by the race committee.
- 5.3 The question of whether a boat has sailed the course as required is a different issue from meeting a reporting requirement. The former should be the subject of a protest, to be decided by a protest committee, with DSQ as the default penalty. The latter could be a potentially lesser penalty, which could, if so stated in the sailing instructions, be administered, without a hearing, by the race committee, subject to the right to a hearing if disputed by the boat.
- 5.4 A recommended sailing instruction is as follows:

[Provide:

SI XXX to define the evidence required that the boat has sailed the course correctly,

SI YYY to state the penalty to be applied for failing to provide the evidence required in SI XXX]

A boat that fails to provide the evidence of sailing the course required by SI XXX shall be penalised by the race committee without a hearing. The penalty shall be in accordance with SI YYY. A boat so penalised shall be entitled to a hearing on request. This changes rule 63.1.

A boat shall not protest another boat for failing to report as required by SI XXX. This changes rule 60.1.

6. Specifying a Waypoint

- 6.1 When describing a waypoint in the sailing instructions, the following form of words is recommended.

Note: the GPS coordinates of a geographic position can vary significantly depending on the GPS Datum used. The datum used by most British Admiralty charts is WGS84.

- 6.2 A recommended sailing instruction is as follows:

GPS Datum. All GPS positions specified, or required to be reported, in these sailing instructions shall use the XXXXX Datum.

Waypoint NAME

Latitude nn:nn.nnn E/W

Longitude nnn:nn.nnn N/S

Round [or Pass] to Port/Starboard

*Rounding [or Passing] Quadrant between bearing lines nnn degrees and yyy degrees
TRUE/MAGNETIC to the waypoint.*

7. Credit

This guidance was originally produced by the Royal Yachting Association and the Royal Ocean Racing Club and World Sailing would like to thank and credit them for our use of it.