

Plotting a course to Steer

This article describes how to calculate the right course to steer, given the tidal and wind direction and speed. No easy task.

Introduction

1. You know your starting position, starting time (UT or BST) and where you want to get to, in this case a wreck.
2. Draw a line from your starting position to your required destination and continue the line beyond the destination point (even if this line continues over land after the destination point). This line is the course you want to go, or the course over the ground (COG). Therefore it should be marked with a double arrow.



3. Measure the length of the line between starting point and destination in nautical miles (measured only from the latitude scale on the side of your chart). You know the speed which you hope to achieve through the water. So, through still water, how long would it take you to move that distance between start and destination - how long to the nearest half hour.
4. Remember that time - a half hour, an hour, an hour and a half or whatever. A time which starts at the time you set sail from your starting position. What is the tide going to do during that time?
5. Having ascertained the tidal data, from your starting position draw in this tide from the starting point. The tidal direction (set) in degrees true $^{\circ}(T)$, the tidal length (drift) in nautical miles and tenths of a mile.
6. If the tidal set and drift will change during your intended passage, then draw in the first element of tide (set and drift) followed by the second element of tide (set and drift). As in all chart work the tidal vector should be identified with three arrows.
7. Now comes the bit of magic! Forget how far it is from your starting point to your destination. Remember the

amount of time you determined from para. 3 above - it was to the nearest half hour wasn't it? The same time as you have taken for your tidal calculation. Your boat is doing a certain speed which you know. So, in that time you will cover a certain distance. Open up your dividers to that distance, (as measured on the latitude scale), place one end of the dividers on the end of your tidal line (tidal vector) and strike a line with the other end of the dividers across the line with the double arrow on it (your ground track line).

8. Now you have a mark on the course that you want to make good, the course over the ground, the line from your starting position to and beyond your destination. That mark may be on the line short of your destination, it may be on the line beyond your destination - it does not matter. If the mark happens to be on your destination you are either cheating or lucky!.
9. Now draw a line from the end of your tidal vector to that mark. That line is your COURSE to STEER in direction. One arrow on this one.
10. You may want to know the ETA (estimated time of arrival) at your destination. Go back to your starting point, measure the distance between start and the 'mark' on the line that goes from the start to, and beyond, the destination. From the start to that mark is the distance you will cover in the 'time' - the time you have been using throughout. So you will now know the speed made good over the ground from that time and that distance. Right from the beginning you measured the distance - you now know the speed - you can work out the ETA. If the 'mark' is short of the destination, it will take you longer than the 'time', if the 'mark' is beyond the destination it will take less than the 'time'.
11. If there is any leeway to be taken into account, you apply that leeway to the course to steer by steering into the wind. e.g. if, before applying leeway, the course to steer is $308^{\circ}(T)$, and the wind is NorthEast, and the leeway is estimated at 10° , then you would steer into wind on a course of $318^{\circ}(T)$.

Summary

To Find Course to Steer.

- After plotting your desired course over the ground, put in the tidal vector first for the estimated time for the direct travel. Strike off an arc on the line from the start to and beyond finish of a distance that you would sail through the water during that time.
- Join the end of the vector to the point of arc to give direction of Course to Steer - adjust this course with leeway if necessary.