

THE LOCKDOWN ARTICLES

GPS Article 2

This article follows on from the previous one which should be read first.

If you've been reading more of the manual than I suggested, you may have found lots of interesting features and even a basic GPS usually has the ability to set up routes with multiple waypoints. If you become utterly familiar with such matters they may be useful, though if something changes in the middle of executing a plan it may not be easy to sort out.

My suggestion is that you ignore such features for practical navigation at sea and use the simplest route of all – the GoTo route.

The GoTo route is simply the route from where you are to a named waypoint that you have previously entered. Your GPS will have a page to allow you to select the appropriate waypoint and navigate to that. Having done so it will either already be on a page showing bearing to it together with distance and COG (which may be called something else) or you can select that page.

A word of warning. The GoTo route is a straight line between where you are and the selected waypoint – it takes no note of what is in between. Do lay the plotter on the chart to make sure that the course is well clear of hazards.

Having set up your GoTo route the task is to follow it. In essence all that has to be done is to get the helmsman to steer so that the COG is the same as the bearing and you will be following the desired course to the waypoint and able to monitor your progress by looking at the distance from time to time. For various reasons such as tidal stream, wind and waves the yacht is unlikely to hold a steady course so adjustments need to be made from time to time. As explained in the previous article the COG will vary somewhat anyway so you need to watch it for a while to get a mental average. If the average is different from the bearing then the helmsman must alter course so that they are both the same again.

This seems very simple, but in practice I have seen it cause huge confusion at sea on many occasions. The GPS is likely to have an arrow or a compass. In many cases this has been the source of the confusion so I suggest you ignore it. The best way to avoid problems at sea is to practice on land*. You need a big open area that you can stroll around – the Downs is good if you live in Bristol. Start by walking in a straight line and looking at the COG. For reasons explained in the previous article this will not be constant, but with practice you can work out a mental average. If you can walk faster, you will see the variation either side of the average will reduce. It will be better still at sea as you will almost certainly be moving faster.

Having got used to the mental averaging stand in an open space preferably away from any landmark so you will have to rely on the GPS to get back to your position. Mark your current position as a waypoint – name it as you choose. Then walk away from it ½ mile or so if possible. Then GoTo the waypoint as described above. Let's say the bearing is 080 and you start walking roughly in that direction but the COG shows you making 100. You alter course to the left a little until your COG is 080 then keep the two numbers the same. If you alter too much so your COG goes to say 065 alter back a little to the right 'til you're following the right course.

Play with it until it becomes second nature. You will see that if your COG is bigger than the bearing you need to alter to the left and vice versa. There is a bit of a complication if your course is close to

North. You have to, for example, read 010 as bigger than 350. This sounds complicated but is far easier to do than to read on the page.

Now try deliberately walking to the right of your course for some distance (you might for example be avoiding a ship - though that is unlikely on the Downs). You will see that the bearing has changed (decreased) so simply altering to match the COG to the bearing will not bring you back to the original course as above. This may or may not be important at sea as the 'new' course may be clear of hazards, but you will need to check on the chart. For the purposes of this exercise let's assume it is important to follow the original course. At this point you are no longer trying to match the COG and the bearing. You will need to turn left and walk watching the bearing which will start to increase – if not turn more to the left. When bearing is back to the original course start matching COG with the bearing as before. Once again this is easier to do than to read. Keep practicing until you get it. Then you are ready for using it at sea.

You will have noted that this simple GoTo route is a straight line but your course may not be. All you need do is put in a waypoint at each turning point and when you reach one you select the next GoTo route and carry on.

* No I didn't just write this sat in an armchair but tried it out on the Downs. It was so windy at the time I thought of correcting for leeway (joke!)

Example at Sea – see diagram

You are approaching the French coast on passage to Treguier when ten miles off the coast the wind dies and you run into thick fog. You decide against attempting the tortuous entrance on GPS and don't like the look of Lezardrieux in very poor visibility either. It would be a long wait for the tide at Perros Guirec and Port Blanc is closer with a single straight course to enter. It has a narrow deep water entrance and the Almanac indicates visitors buoys – many with ample depth. If they are all occupied there is room to anchor so a good choice all round.

Start by plotting your GPS position on the chart. You will of course have been plotting regular positions by GPS or traditional methods so you will see instantly if the position 'looks right'. Now look at the chart for Port Blanc. The approach course is 150 true to Le Voleur lighthouse (if only you could see it!) Put your plotter on that line and see it passes quite close to a port hand beacon well inside the harbour so mark a waypoint on the line close to that. Outside of the harbour you see there is a reef close to the course. You mark another waypoint a little to seaward of that reef about 2M from the first, but on the same line. Now put the plotter on your current position and that (seaward) waypoint and note that the course is well clear of all hazards. Enter both waypoints in your GPS (ideally with someone else checking as described in previous article) select the seaward one for a GoTo route.

Motor towards that waypoint keeping the COG and bearing the same by giving course adjustments to the helmsman. He will be using the steering compass and his course may not be the same as the COG so just saying turn 5 degrees left or right (port or starboard would be better, but either way of saying it works) as a course adjustment. As a cross check, plot your position from the yacht's GPS on the chart at intervals to make sure that it agrees with the handheld. You really can't cross check too often closing a rocky shoreline in fog. Looking again at the chart you see a useful depth contour that would keep you clear of the rocks so you correct that for height of tide. When you arrive at seaward waypoint select the one in the harbour and follow the same procedure for following the course to it. Ask the helmsman to keep an eye on the depth and to let you know if it is getting close to the figure

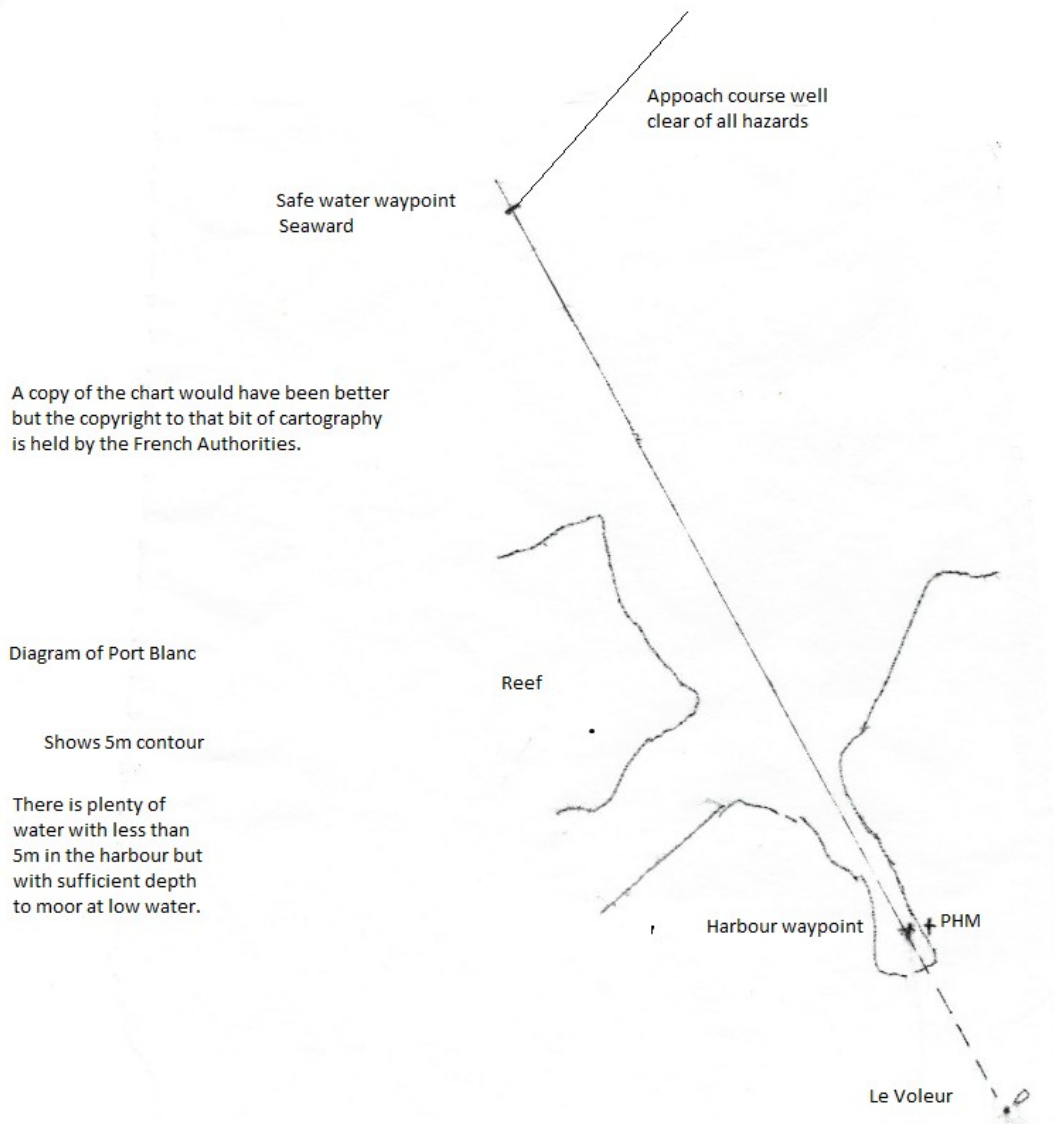
you calculated as a further cross check. It is bad practice to rely entirely on a single navigational input!

When you reach the harbour waypoint (comforting to just make out the port beacon where it should be) you are within 100m of the moorings so motor gently South 'feeling' your way in with the echo sounder to find a free one.

If it's still foggy when you come to leave motor gently to the harbour waypoint. In theory you could leave on a back bearing to that waypoint but the whole operation then becomes mind wrenching and you really haven't got room for making mistakes so select the seaward waypoint and follow the course to that.

Electronic plotters a warning

You might have one aboard and be tempted to use it instead of the above. I have had a few fail in less than obvious ways so don't trust them. The most extreme was at the bottom of the Chenal du Four with the tide turning against us, getting dark, and intermittent bad visibility from the rainy squalls when the yacht's position on the screen froze and remained frozen for hours though the numbers continued to update. There was no error message and it took a couple of minutes to notice. We had been keeping our log up to date so were able to deal with it. If you used an electronic plotter in the above situation, I would strongly recommend using it as a cross check on the above procedure and not to rely on it alone.



A copy of the chart would have been better but the copyright to that bit of cartography is held by the French Authorities.

Diagram of Port Blanc

Shows 5m contour

There is plenty of water with less than 5m in the harbour but with sufficient depth to moor at low water.