NCI FLEETWOOD TRAINING MANUAL

PART 8

CHARTWORK

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Introduction

When on land one is able to pinpoint one's exact position by reference to a Grid reference on an Ordnance Survey (OS) **map**. This reference is read first from the horizontal grid (such as that along the bottom of the map), then from the vertical grid (such as is found at the side). There will also be letters identifying the 100,000 metre square in which the point lies.

The OS Grid reference for Rossall Point Tower is SD314479.

At sea the exact position of vessels or objects is pinpointed by reference to a **chart** and expressed as their latitude and longitude. In this instance the reference is given first from the vertical scale (at the side of the chart) – 'latitude'; and then from the horizontal scale (at the bottom) – 'longitude'.

Latitude is the angular distance of a point on the earth's surface north or south of the equator measured from 0-90° N or S. Longitude is the angular distance of a point east or west of the Greenwich meridian measured from 0-180° E or W.

The coordinates for Rossall Point Tower are 53°55.33N; 003°02.69W

In angular measurement there are 360 degrees in a circle. Each degree is subdivided into 60 minutes of arc. Latitude and longitude are generally expressed in degrees °, minutes ' and tenths of a minute. A minute of latitude equals one nautical mile.

A nautical mile, the length of a minute of latitude, equals 1.15 statute miles.

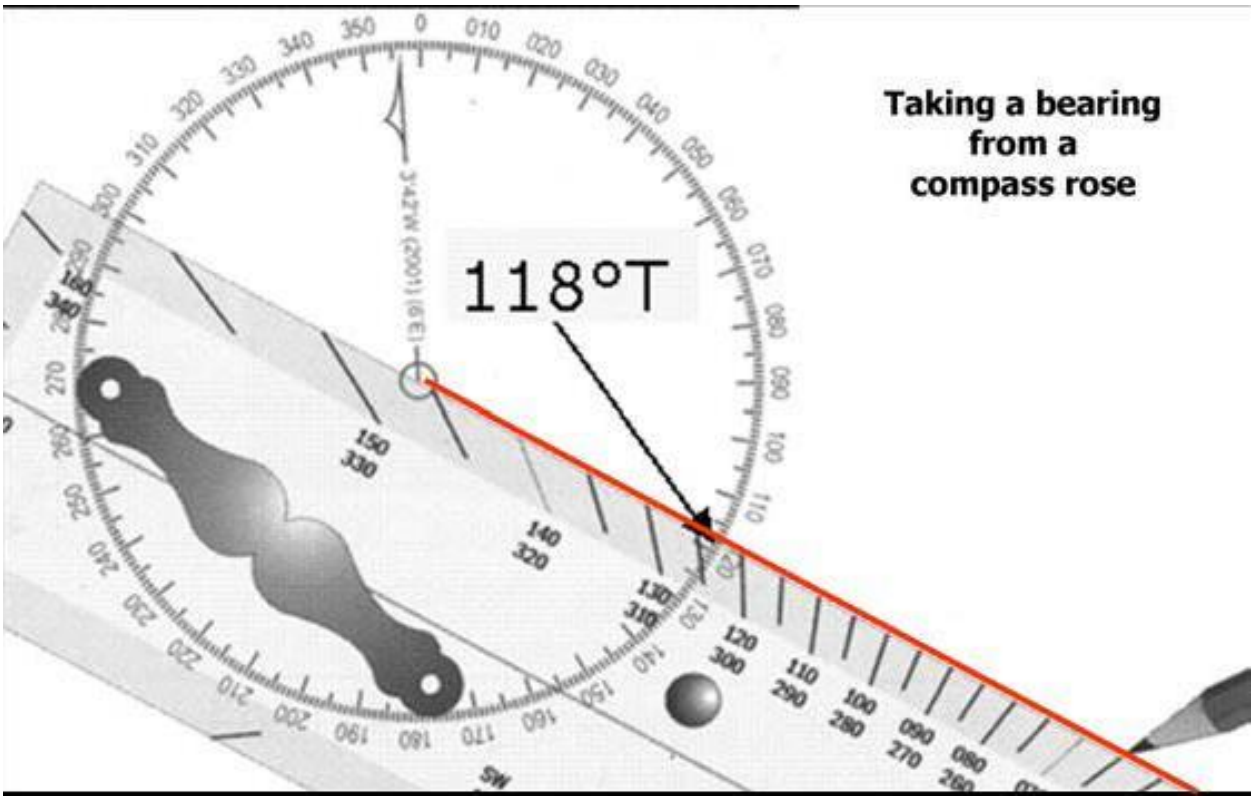
There are various symbols, abbreviations and marginal notes on a Nautical chart which convey a wealth of useful information and watchkeepers should familiarise themselves with the chart at the Tower.

Bearings

To establish the position of a craft within visual range a watchkeeper must establish its bearing from the watchstation. Bearings are expressed in three figures e.g. 045°, 090°, 275°. **Watch-keepers should aim to plot a position accurately within 30 seconds of time.**

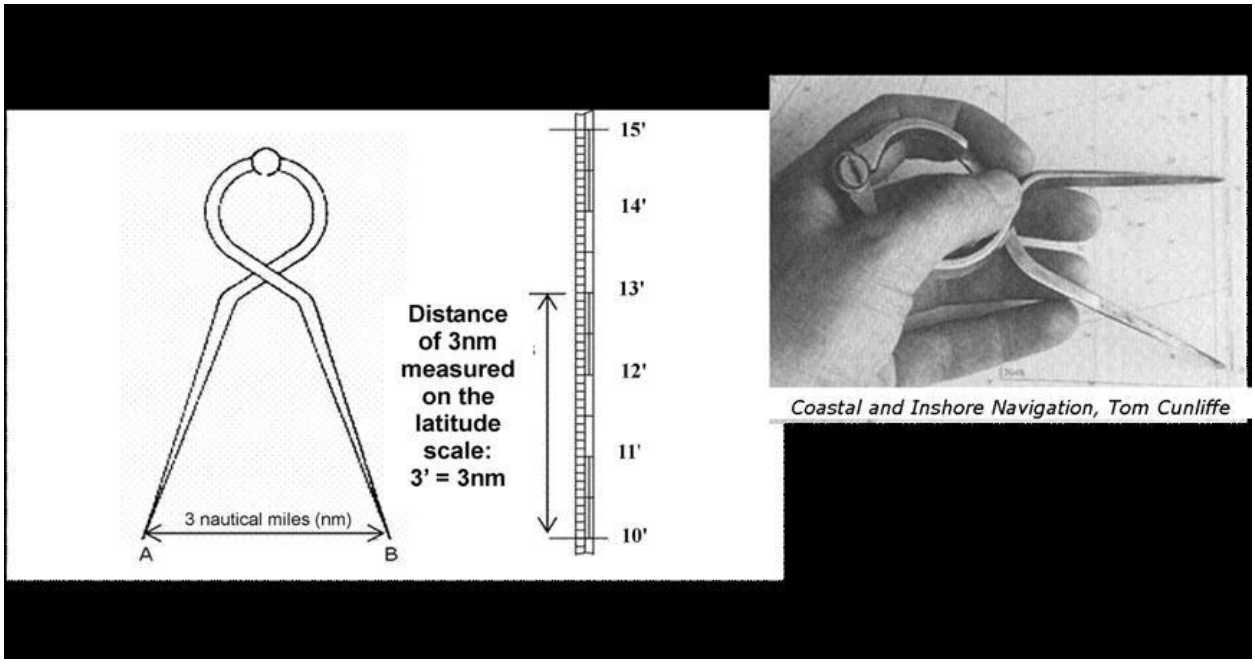
A bearing should be recorded as either 'true' (T) or 'magnetic' (M). Pelorus bearings are always 'true'. Magnetic variation is becoming less significant because the variation is now less than 2° and within 10 years will reduce to 0°.

The pelorus is generally used to obtain the target's bearing from the watchstation. In the example set out in the following diagrams a bearing of 118°T has been taken from the pelorus, and the distance to the casualty/object has been estimated as 4nm (nautical miles). The bearing can now be transferred to the chart. Place the parallel ruler on the chart over a compass rose, and position one edge to read the bearing as shown in the diagram below.



The working chart on the plotting table has a transparent compass rose superimposed and centred over the station's charted position. Now draw a line from the station towards and beyond the anticipated target position.

In our example the distance of the target from the watchstation has been estimated as 4 nautical miles. Using the dividers we can measure off this distance from the latitude scale along the right hand edge of the chart.

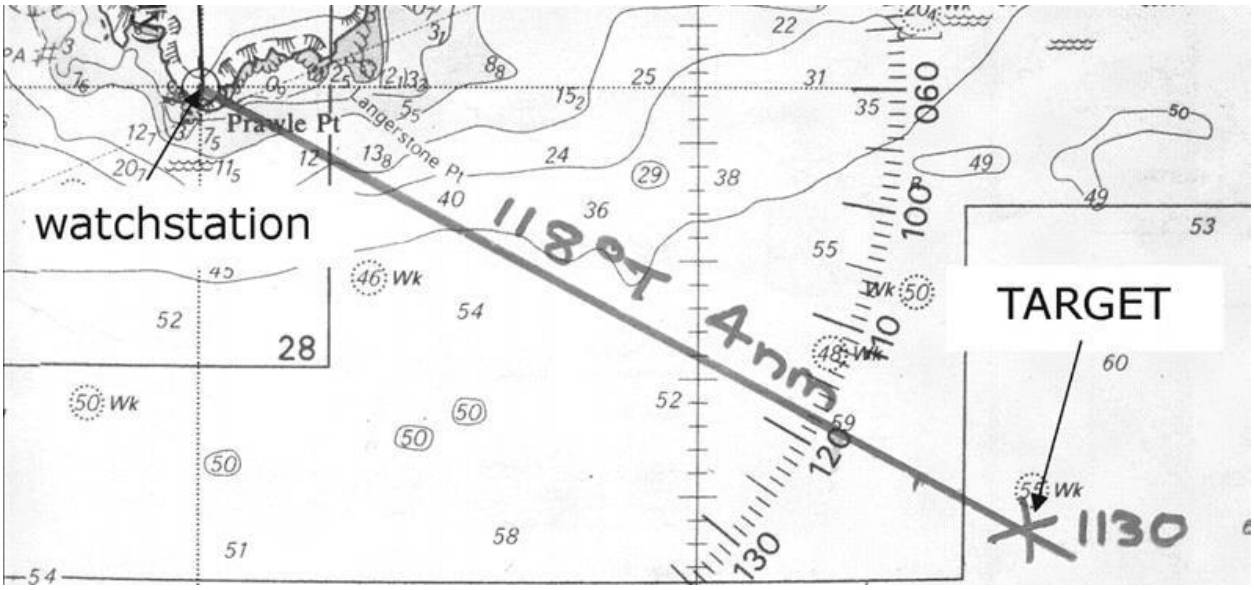


Distance should always be measured from the latitude scale at the same approximate position to that of the position being plotted. Never measure distance from the longitude scale. Again, 1 minute of latitude when measured **from the adjacent latitude scale** = 1 Nautical mile.

A reciprocal bearing is always plus or minus 180°. If under 180° add 180°, if over 180° deduct 180°. In our example the reciprocal bearing to 118 degrees is 298 degrees.

Marking the Position

With the dividers, step off the distance from the station along the bearing line (or use the nautical mile rule as described above), and mark the position of the target. On the chart in the tower there are 5 rings measured from the centre of the compass rose each being 1 nm apart. In a clear nearby convenient space on the chart write the bearing and distance and, near the target, the time of the plot.



Latitude

As stated the vertical sides of the chart are marked in a scale of latitude. The lines drawn horizontally across the chart are called “Parallels of Latitude”. One minute of latitude on a chart equals one nautical mile (2027 yds). Always measure distance from parallels of latitude, NOT longitude, and from the side of the chart nearest to the distance being measured.

Longitude

The top and bottom of the chart are marked in scales of longitude. The lines drawn vertically on the chart are called “Meridians of Longitude”.

Always use 3 digits e.g. 003 degrees

Plotting a given Lat/Long Position

1. Find the position of latitude on the scale at the side of the chart.

2. From this point draw a line parallel to a parallel line of latitude printed on the chart. The line need only be drawn approximately over the estimated position of the target/vessel.

3. Find the position of longitude on the scale at the top or bottom of the chart.

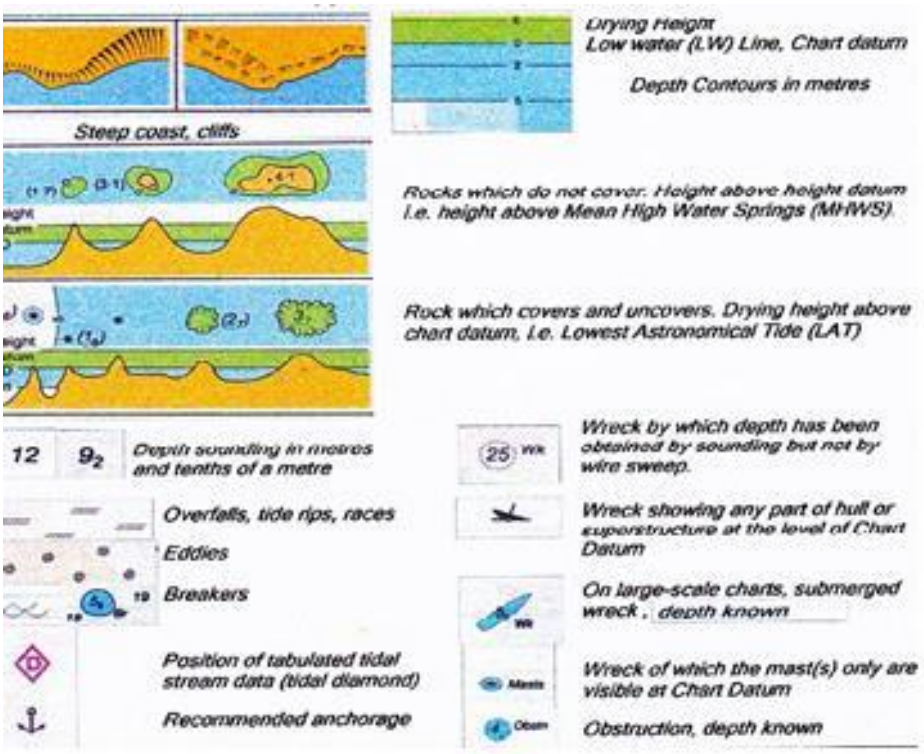
4. Draw a line from this point parallel to a meridian to intersect the previously marked parallel of latitude.

5. The point of intersection is the plotted position.

When plotting the bearing/distance or the 'lat/long' of a target on a chart, it is always a good idea to do a 'gross error check' by looking out at the target to see if the plotted position looks correct relative to that you have observed visually.

Watchkeepers should aim for maximum accuracy in giving a bearing in order to reduce the search area for the rescue boat or helicopter. An error of 5° over a distance of 5nm gives rise to a position error of nearly 0.5nm. Even a 1° at this distance creates a location error of almost 200 yards — easily large enough for an ILB to pass a casualty without seeing him.

Some relevant chart symbols



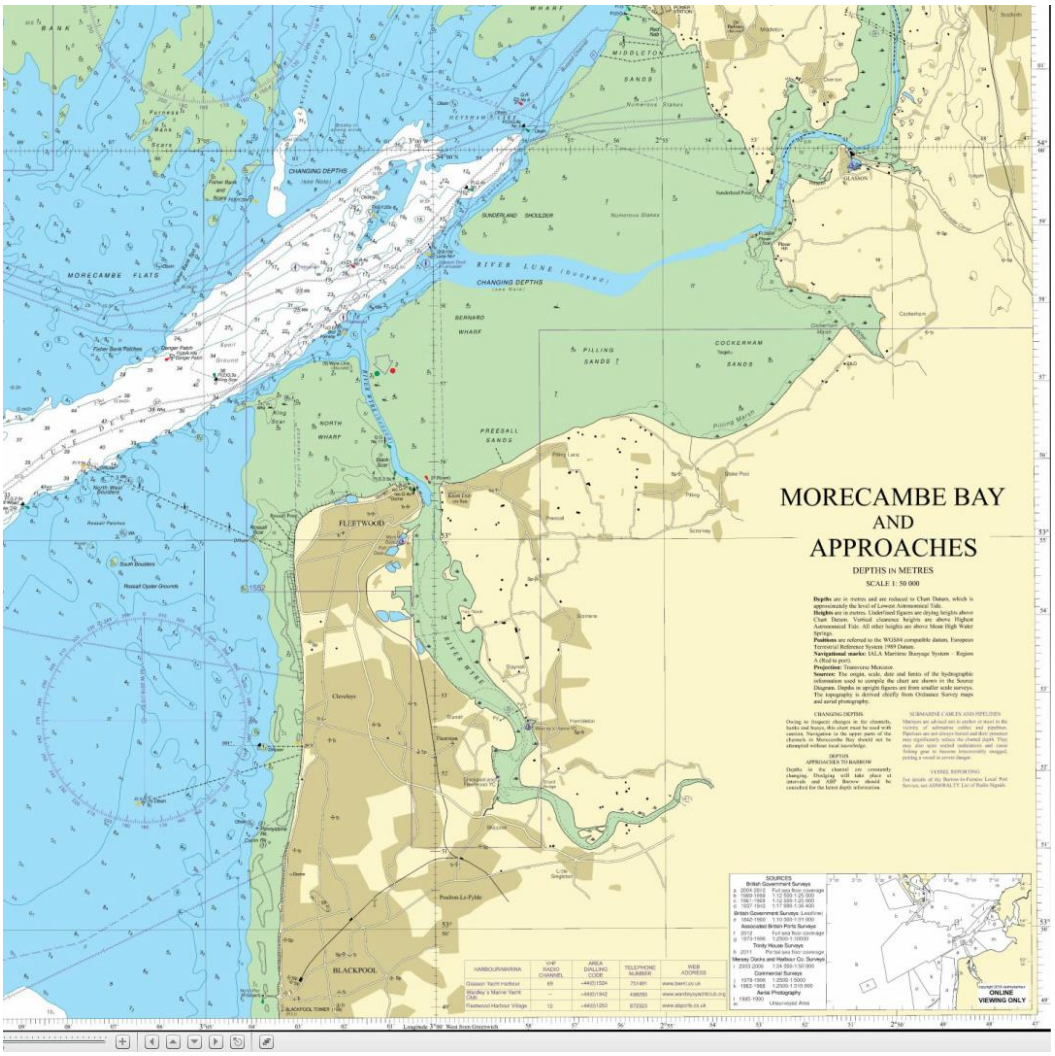


CHART COLOUR

- Land
- Sea area that dries at low tide
- Sea depth 0 – 5 m
- Sea depth 5 – 10 m
- Any white area indicates sea depth greater than 10 m

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