





YM 2023
Week 2 – Charts 1



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Charts and Publications



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Projections

- Chart is a 2-D representation of a 3-D shape.
- The Earth is an “oblate spheroid” - we use a “model” of the earth as the basis for the chart - this is the chart’s geographic datum.
- Most charts are now based on the **WGS 84** datum.
- Conversion from 3-D to 2-D is achieved by “projection”.



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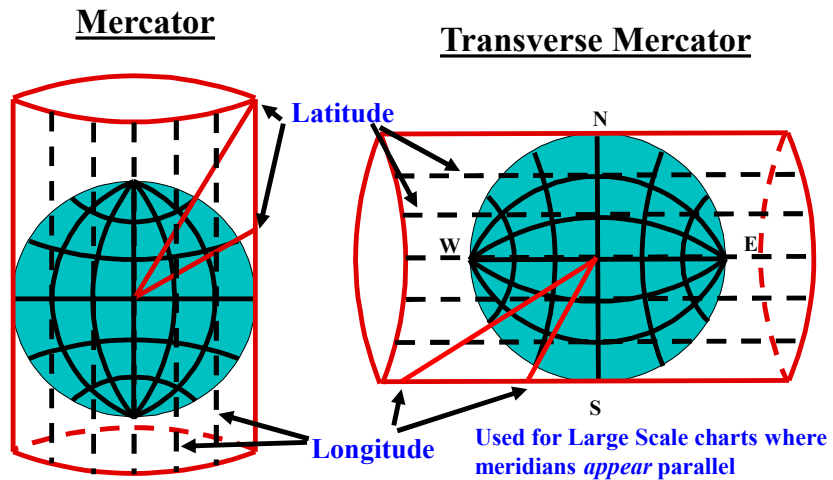
Projections

- Two systems of projection are used for nautical charts:
 - Mercator
 - Gnomonic



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CHART PROJECTIONS



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Mercator Projection

• Advantages

- Lines of Longitude and Parallels of Latitude both appear as parallel lines.
- Very good at representing direction

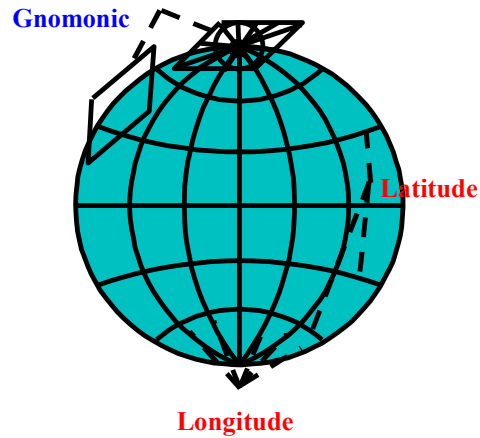
• Disadvantages

- Distances are distorted specially towards the poles.
- Straight lines are not the shortest distance between two points.

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CHART PROJECTIONS

Gnomonic



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Gnomonic Projection

• Advantages

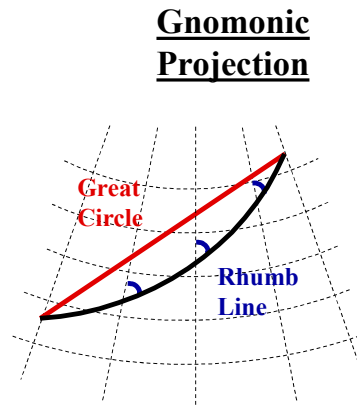
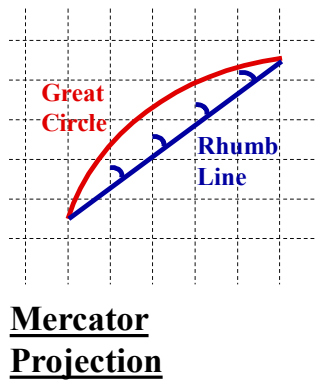
- Good in Polar areas where Mercator is very distorted.
- Shortest distance between two points is a straight line on the chart.

• Disadvantages

- Too much distortion of distance, direction, shape and area as you move away from the "tangent" point, hence only useful for small area or polar charts.

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RHUMB LINE SAILING



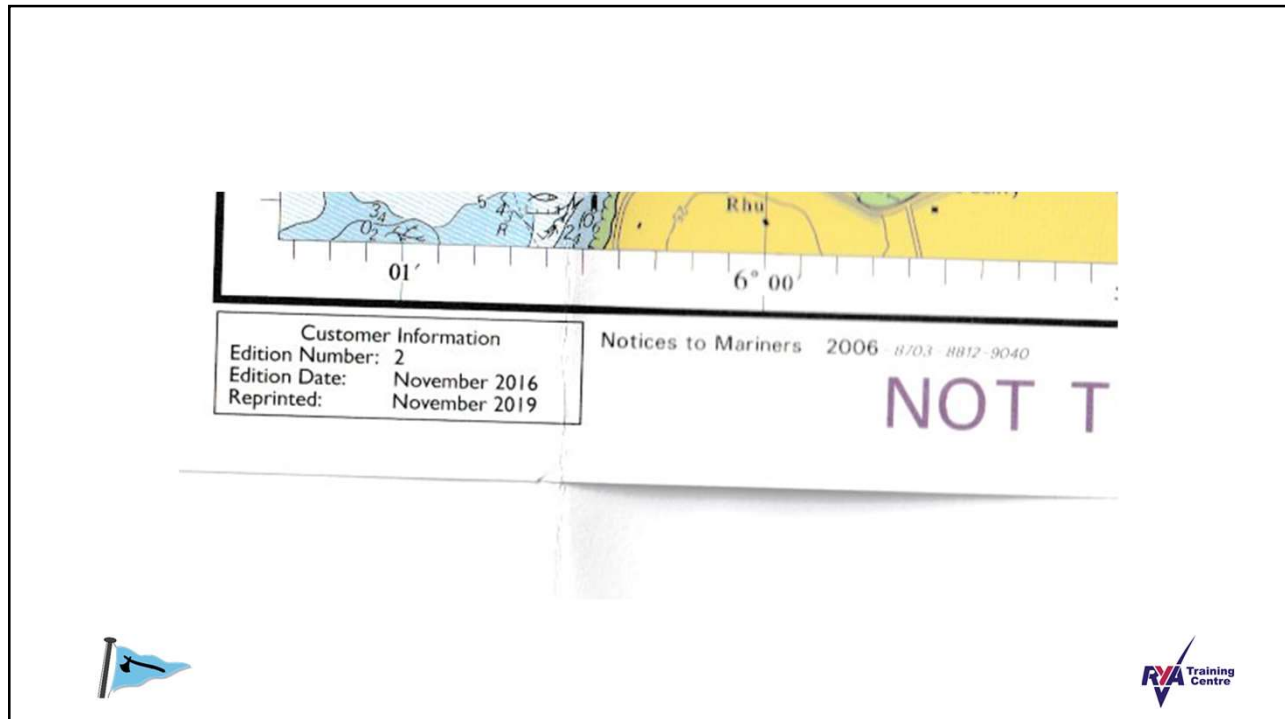
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RYA 3 and 4

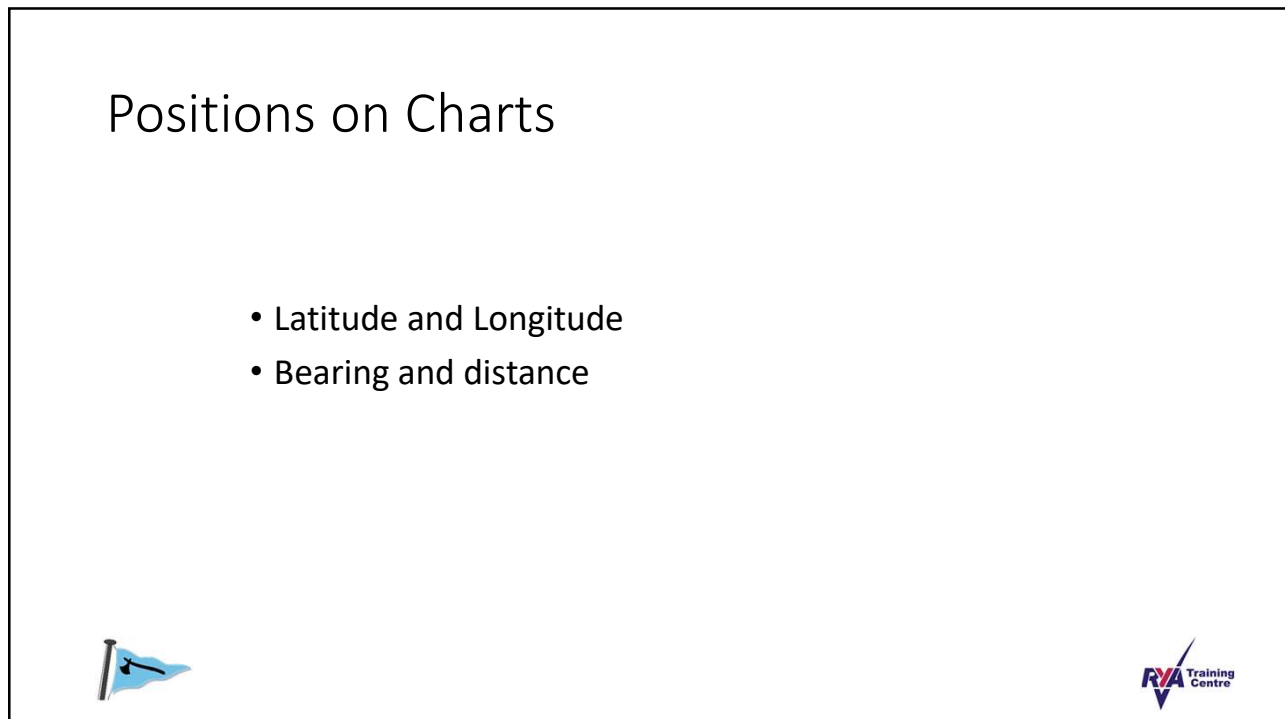
- These are “Admiralty Charts” produced by the UKHO.
- Charts are updated through “Admiralty Notices to Mariners” – now from web.
- <http://www.ukho.gov.uk/nmwebsearch/>
- “Real” charts up to date when they leave the chart agents.
- Corrections are noted in the bottom left hand corner of the chart.



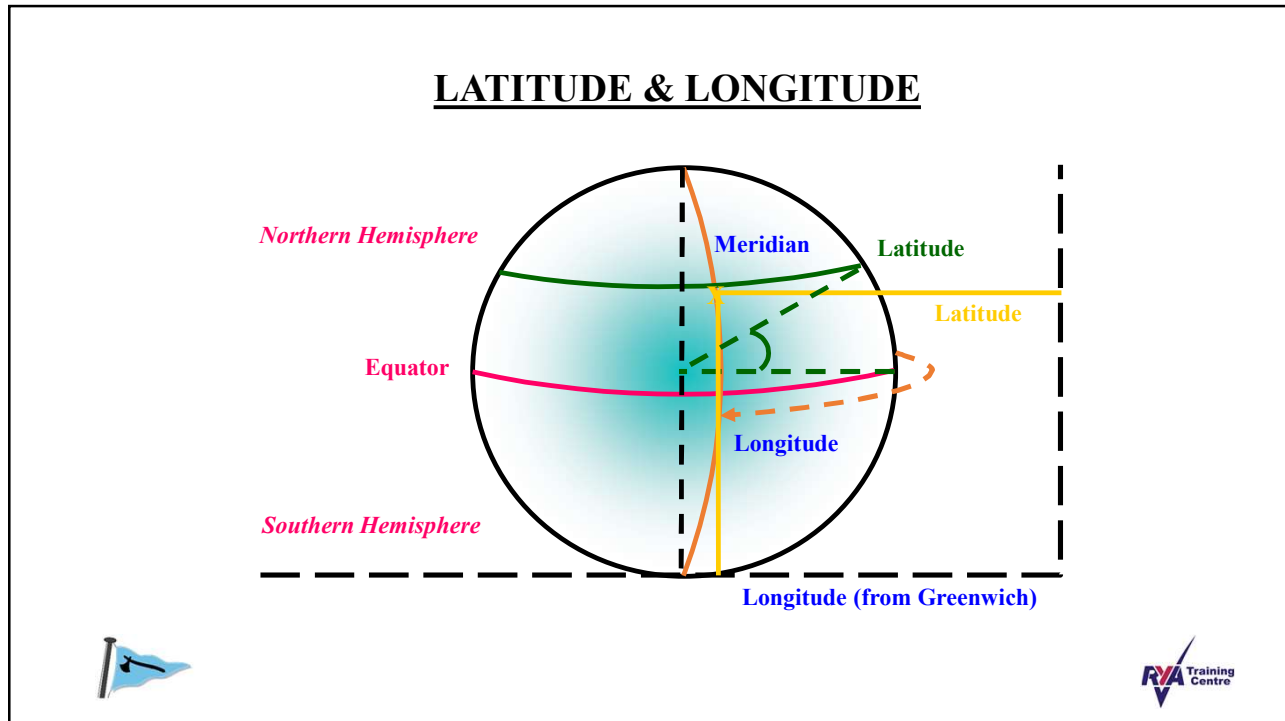
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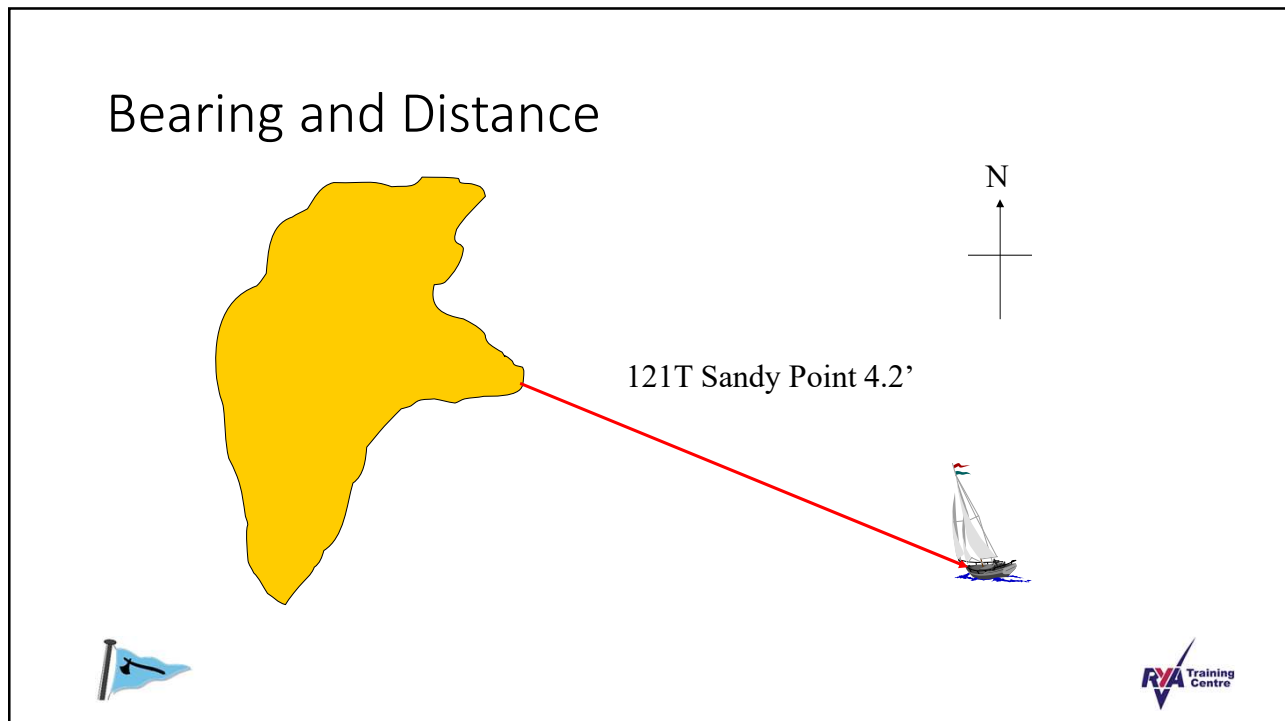
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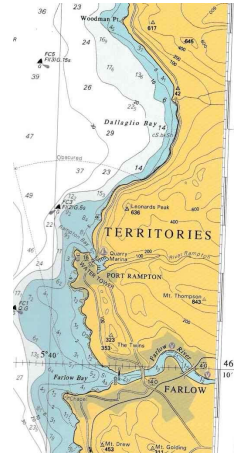


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Mercator Projection – Measuring Distance

Distance is measured on the
Latitude Scale
 at the same latitude as the
 distance is being measured.

One MINUTE of latitude is
 one NAUTICAL MILE.



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Mercator Projection – measuring distance

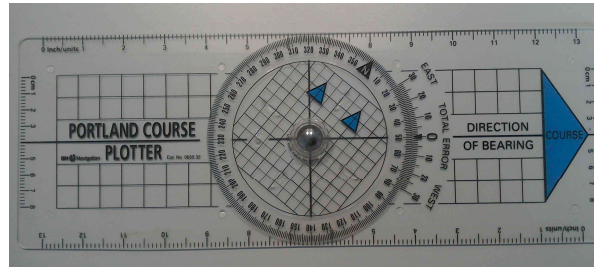


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Measuring Direction

Bearings are measured from TRUE NORTH using the lines of Longitude on the chart.

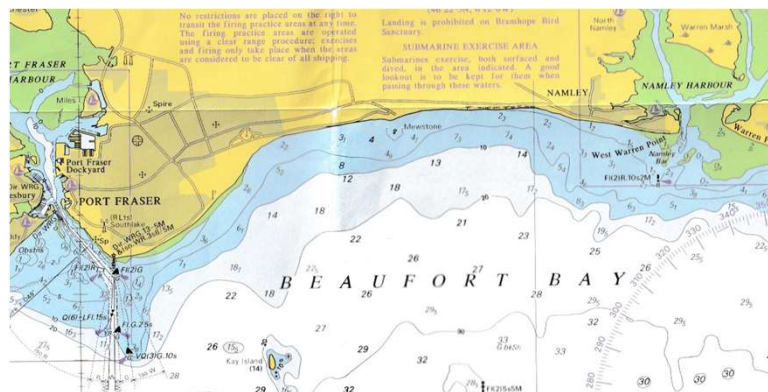
This can be done with the Portland Plotter.



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A revision question :

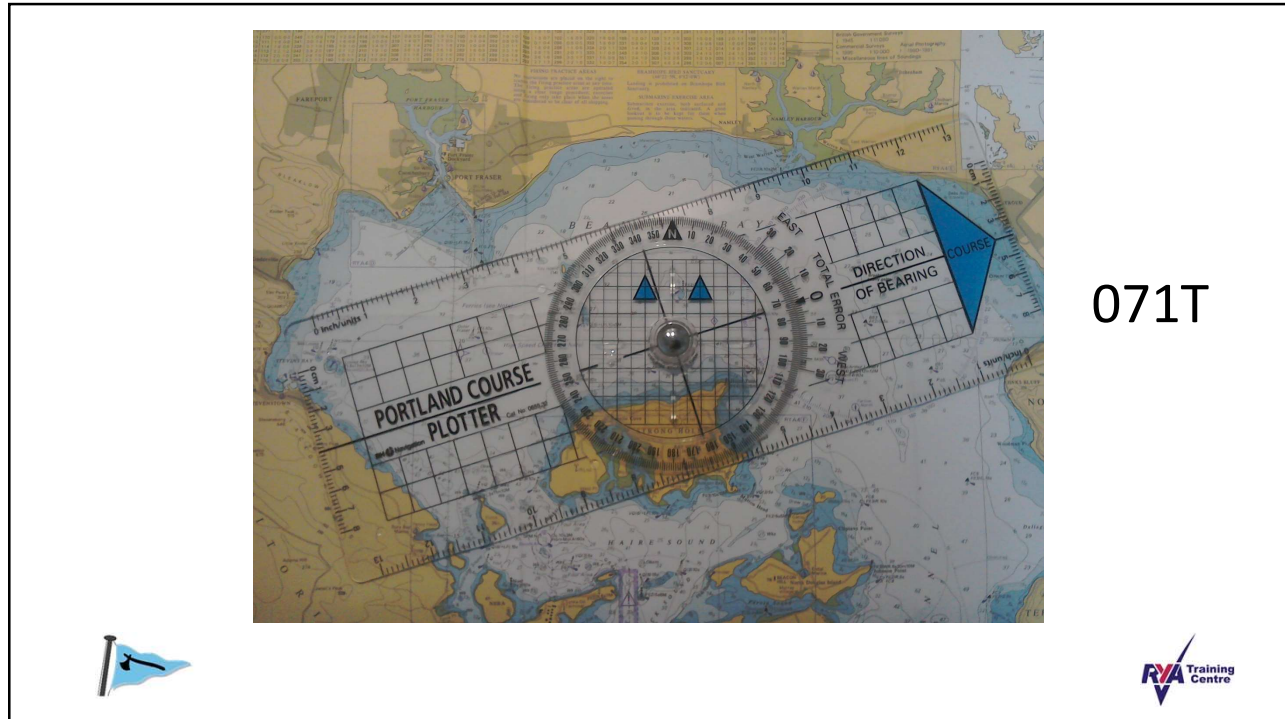
What is the True Bearing from the Green Lateral Buoy in position $46^{\circ} 22.1'N / 005^{\circ} 58.9'W$ to the Red Beacon to the south of West Warren Point?



RYA 3

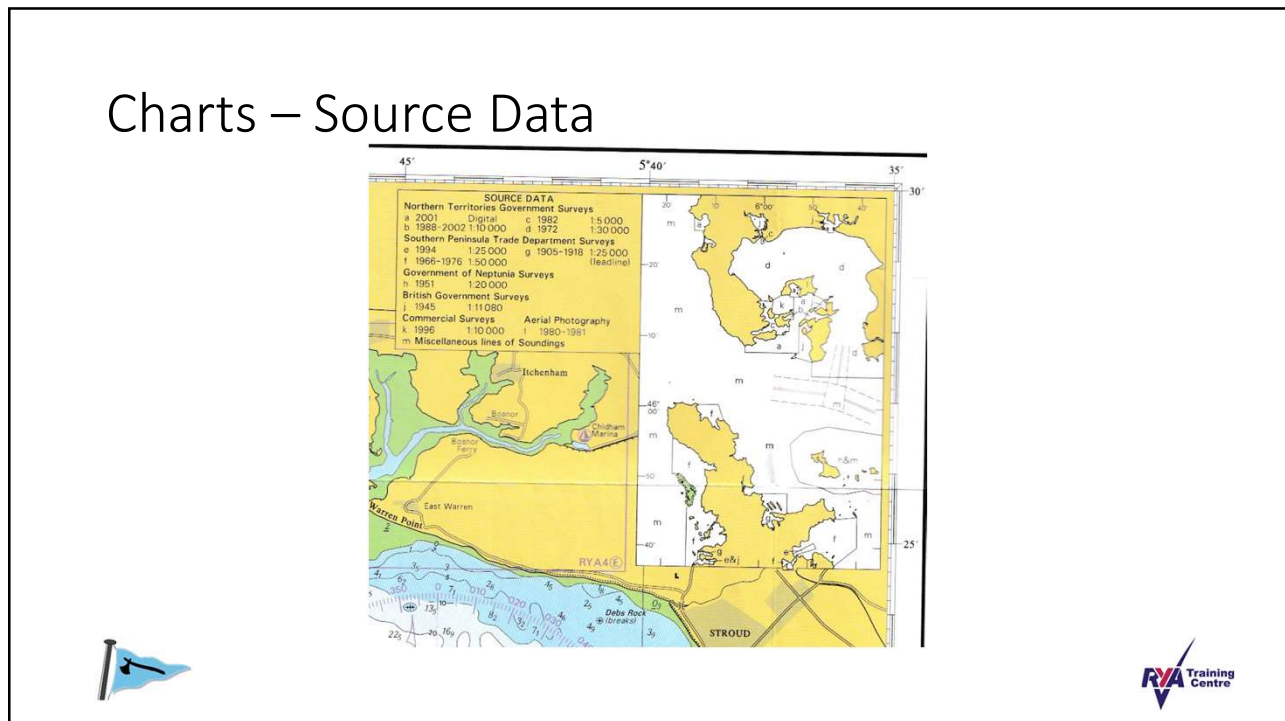


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