

# 9b. Handout - Piloting

## Overview – Nautical Chart

**Mercator projection:** Most coastal nautical charts are constructed with this method. Angles are true and distances can be measured using the vertical scale.

**Stereographic projection:** Used for chart covering small areas. Like the Mercator projection use the vertical scale to measure distances.

**Gnomic projection:** Used for vast areas. Great circles appear as straight lines on the chart.

**Great circle navigation:** The shortest course on earth between two positions is a great circle; for circumnavigating and ocean crossings.

**Loxodrome:** A (rhumb) line that makes the same angle with all meridians. Theoretically, this is not the shortest route, but a handy straight line on a Mercator chart.

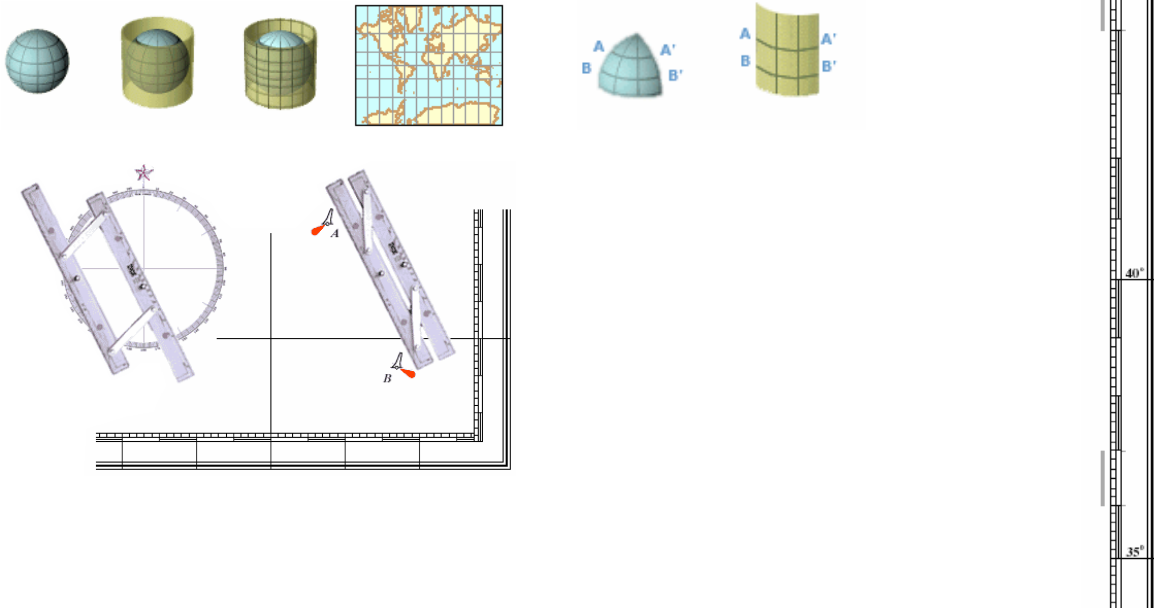
**Horizontal Geodetic Datum:** Defines the relationship between the ellipsoid adopted as the model of the Earth's shape, and the Earth itself. Coordinates, which refer to, for instance, AIA, should be corrected before plotting them in a chart based on another horizontal datum. If your GPS receiver consistently disagrees with known positions by a constant amount and direction, then check you have set it to display the correct horizontal datum.

**Chart Sounding Datum:** The tidal datum (fictitious plane) to which soundings, heights, elevations and drying heights on a chart are referred.

**Vertical scale:** Distances in nautical miles or minutes (') should be measured at the same latitude on the vertical scale.

**Corrections:** Each chart is liable to corrections, which are published by either a national body or the publisher of the nautical chart.

## Images



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### Overview – Plotting and Piloting

**Line Of Position (LOP):** The locus of points along which a ship's position must lie. A minimum of two LOP's are necessary to establish a fix. It is standard practice to use at least three LOP's when obtaining a fix, to guard against the possibility of and, in some cases, remove ambiguity.

**Transit fix:** The method of lining up charted objects to obtain an LOP.

**Leading lights or Range lights:** A pair of lights or day marks deliberately placed to mark a narrow channel.

**Position fix:** The intersection of various LOP's.

**Cross bearing:** The use of LOP's of several navigational aids to obtain a position fix. Remember to use an optimal angular spread.

**Running fix:** The use of an advanced LOP. Make sure to use only the corresponding DR positions. Also don't use the EP for advancing the first LOP.

**Dead reckoning (DR):** Determining a position by plotting courses and speeds from a known position. It is also used to predict when lights become visible or to determine the set and rate of a current.

**Estimated position (EP):** Combine a corresponding DR position with a single LOP to get an EP position.

**Course (C):** The direction in which a vessel is steered or is intended to be steered (direction through the water).

**Speed(S):** The speed of the boat through the water.

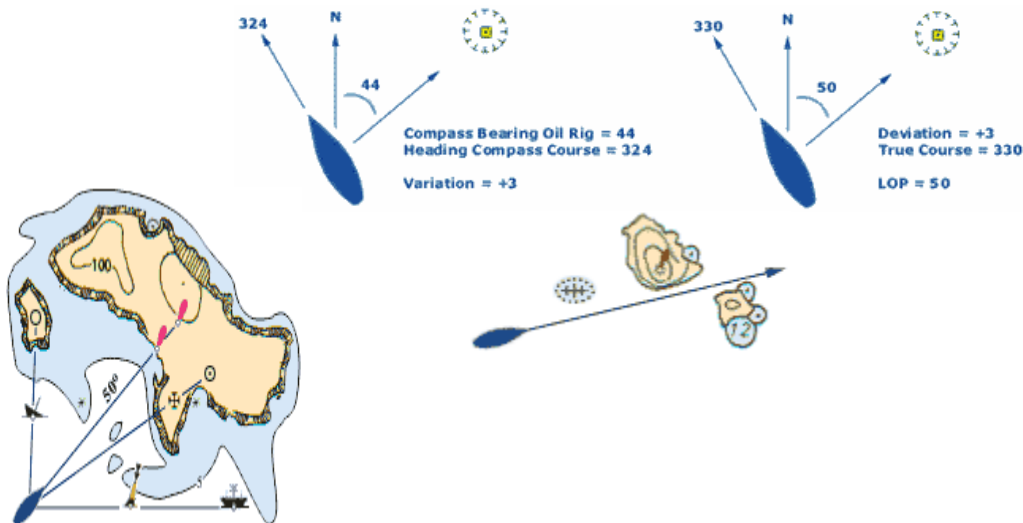
**Set (SET):** The direction in which the current is flowing.

**Drift (DFT):** The speed (in knots) of the current.

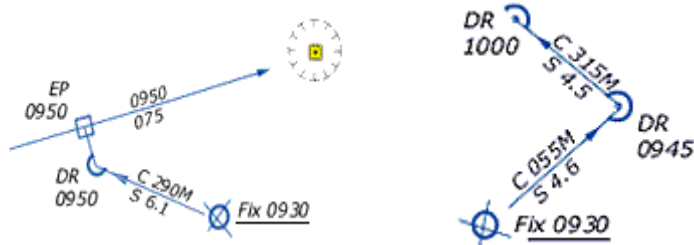
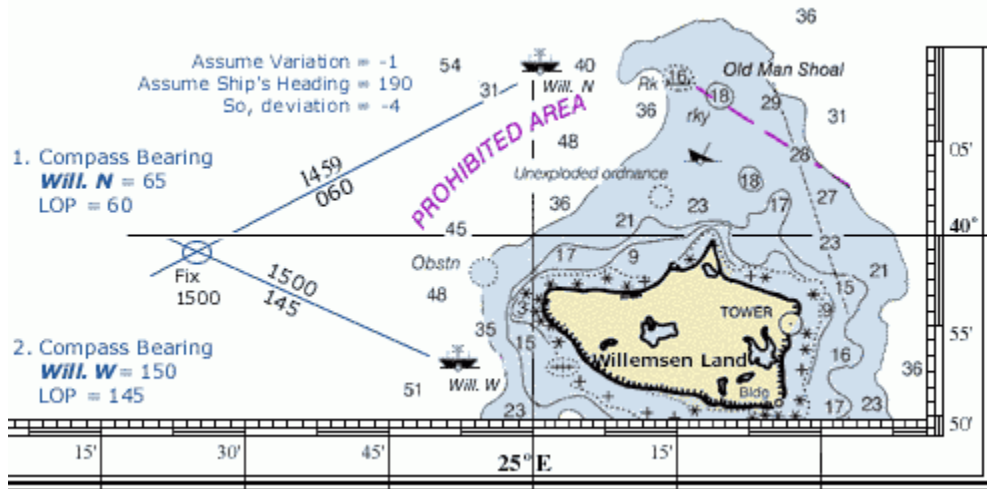
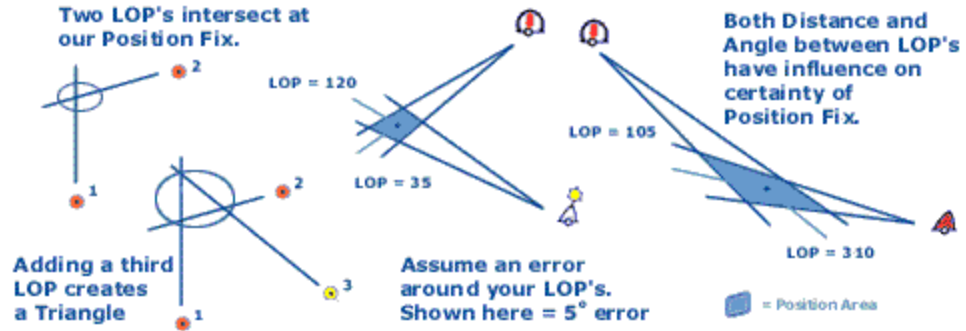
**Default heading** is True course (M = magnetic, C = compass).

**Default time** is 24 hour clock ship time else UTC.

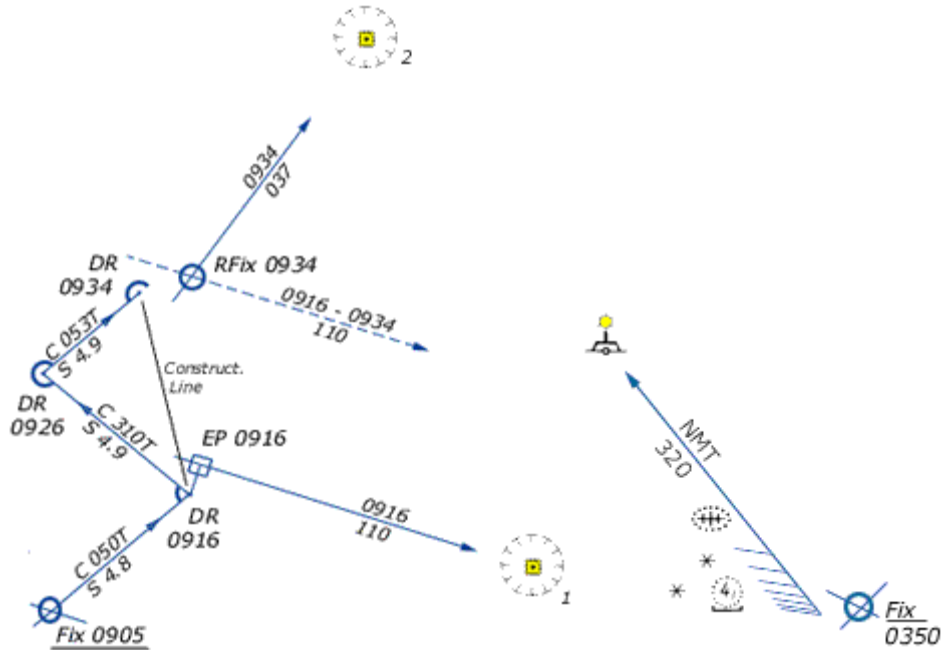
### Images – Plotting and Piloting



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### Notation

Fix:		<u>Fix 1530</u>
Running Fix:		<u>RFix 0911</u>
Estimated Position:		<u>EP 2311</u>
Dead Reckoning:		<u>DR 1747</u>
Electronic Fix (GPS):		<u>GFix 1903</u>
Electronic Fix (Radar):		<u>RaFix 1112</u>

LOP	
LOP advanced	
Course/Speed	
Set/Drift	

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