CELESTIAL NAVIGATION STANDARD

Objective
To be able to demonstrate the celestial navigation theory required to safely navigate a sailing cruiser on an offshore passage. The Standard is applied practically in the Offshore Cruising Standard.

Prerequisites
Coastal Navigation Standard.

Ashore Knowledge
The candidate must be able to:
1. a)   Convert longitude into time
    b)   Convert standard time and zone time to GMT and vice versa
    c)   Calculate the zone time for a given longitude, and
    d)   Calculate the chronometer (or watch) error given a previous error and the daily rate
2. Apply the corrections for index error, dip of the horizon, and total correction to convert sextant altitudes of the sun, stars, planets, and moon to true altitude;
3. Calculate the time of meridian passage of the sun and calculate the boat's latitude from the observed meridian altitude of the sun;
4. Determine the latitude at twilight by means of the Pole Star;
5. Solve the navigational triangle by means of navigation tables (electronic calculators may be used as a supplementary method only);
6. Plot celestial lines of position on a Mercator projection or on an appropriate plotting sheet;
7. Calculate the times (ship's time and GMT) of sunrise, sunset and twilight;
8. Determine the approximate azimuths and altitudes of the navigational stars and planets at twilight;
9. Calculate and plot the lines of position obtained from observations of several celestial bodies at twilight and thus find the boat's position;
10. Advance the LOP obtained from a sun sight to another LOP obtained from the sun at a later time and find the boat's position by means of a running fix (sun-run-sun);
11. Calculate the true bearing of a low altitude celestial body in order to determine the deviation of the ship's compass.