CELESTIAL NAVIGATION STANDARD

Standard Description

A classroom-based course leading to this standard teaches navigation by taking sights on heavenly bodies. Topics covered include positioning using the sun, the moon and selected stars. Methodology taught is H.O. 249.

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

Sail Canada Intermediate Coastal Navigation standard or Sail Canada 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.

Outcomes and Evaluation

You can attain this standard by achieving a minimum of 70% on the Sail Canada Celestial Navigation Examination. Performance on the written exam will be reviewed with the candidate.

Successful candidates will be awarded the Intermediate Coastal Navigation standard and the certification will be noted in the candidates Sail Canada Logbook. Certification is complete when the logbook is signed by the evaluating instructor(s) and a seal affixed, and when the candidate status is updated in the Sail Canada data base. Student certification is good for life.

Additional Notes

Students that have completed Celestial Navigation may further develop their skills by taking the Sail Canada Advanced Navigation or Offshore Cruising course.

Over time student skills may weaken and updates to training to refresh and build skill are recommended.

Physical Requirements for Candidates

None.

Further Information

For further information on navigation training contact your Provincial Sailing Association or Sail Canada.

Resource Material

Celestial Navigation using the Sight Reduction Tables Pub. No. 249
Dominique F, Prinet, Friesen Press

Celestial Navigation Exercises for Class and Home study
by Dominique F, Prinet, Friesen Press