

Celestial Navigation Self-Study Resources

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This document provides suggestions for ASA or Sail Canada students wishing to meet the celestial requirements for ASA 108 or Sail Canada Offshore Cruising.

Offshore Standards

Here are links to the relevant standards:

- ASA 107: <https://asa.com/certifications/asa-107-celestial-navigation/>
- ASA 117: <https://asa.com/certifications/asa-117-basic-celestial-endorsement/>
- Sail Canada Celestial: <https://www.sailing.ca/uploads/2021/03/Celestial-Navigation-22-February-2021.pdf>

ASA 108 (Offshore passage-making) celestial prerequisites

ASA 108 requires either ASA 117 (Basic Celestial Endorsement) or ASA 107 (Celestial navigation).

The course content and exams for 117 and 107 do not focus on actually taking sights with a sextant. That is covered in 108. Instead, you are provided with the sextant data, and learn the techniques for determining and plotting your position based on the provided data.

ASA 117 covers a subset of celestial navigation. The focus is on determining latitude from a noon sun sight, and longitude based on the local time of noon compared to GMT/UTC. It also covers determining latitude from the north star, Polaris. These calculations require some data from a nautical almanac, but do not require using sight reduction tables. Most people could learn these procedures with a few evenings of study.

ASA 107 covers determining position from a sun sight at any time of the day, as well as sights of the moon, 4 planets, and 57 navigational stars. Different inputs from the nautical almanac are required in the calculations for determining position for each type of heavenly body, which requires more time to learn. Position calculations require use of sight reduction tables. Most people will require 10-14

evenings to review the various procedures and cement their knowledge by carrying out various exercises.

Sail Canada Offshore Cruising celestial prerequisites

Sail Canada Offshore requires Sail Canada Celestial as a pre-requisite. Like ASA 107, this covers determining position from a sun sight at any time of the day, as well as sights of the moon, 4 planets, and 57 navigational stars. Time required for preparation will be in the range of 10-14 evenings to review the various procedures and carry out exercises.

What BOSS Offers

BOSS does not currently offer a celestial navigation course, as there is not time to teach it in advance of an offshore passage. Instead, we offer this listing of self-study resources. Alternatively, you can take a formal in-person or online course from another ASA school.

In the case of ASA, we can administer an exam for ASA 117 Basic Celestial Endorsement, or ASA 107 Celestial Navigation before we depart or during the 108 course.

At present we have no instructor on staff who is certified to administer the Sail Canada celestial exam, but can provide guidance on challenging the exam before or after your Offshore Cruising course.

Before and during your Offshore course, we can provide coaching by email and phone.

On the Offshore course itself, we will have several sextants on board for you to use to learn how to take sights. We will have hard copies of the Nautical Almanac and of the Sight Reduction tables. We will also provide sight reduction forms, plotting sheets, parallel rules and the other tools required.

Taking a formal Celestial Navigation course

If you wish to take a formal course, there are various in-person and online options.

For ASA courses, follow the link to:

<https://asa.com/certifications/asa-107-celestial-navigation/> or

<https://asa.com/certifications/asa-117-basic-celestial-endorsement/> , then scroll down and click “Show List of Schools”

For Sail Canada, follow the link to:

<https://members.sailing.ca/index.php?action=search.searchAvailableNAV> , then use the pulldown menu to select “Celestial Navigation Instructor”

Self-study Resources

If you wish to learn celestial on a self-study basis, an internet search for “celestial navigation text” will generate a long list of possibilities. Here are some selected resources you could consider.

For ASA 117

The official text for ASA 117 is *GPS Backup With a Mark 3 Sextant*, by David Burch. This can be ordered from Starpath at <https://www.starpath.com/catalog/books/1997.htm> . Alternatively, it is available from other online booksellers, and is also available as a ebook.

For ASA 207 or Sail Canada Celestial

Alternatives include:

- Resources offered by the Maryland School of Sailing and Seamanship, linked from the ASA 107 page here: http://www.mdschool.com/1celestial_nav.htm. Appear to be available in hard copy only.
- *Celestial Navigation*, by David Burch: <https://www.starpath.com/catalog/books/1887.htm> Available in printed and ebook formats. Burch is a prolific author of books on marine weather and navigation. Additional resources used in the self-study course are here: <https://www.starpath.com/celnavbook/>
- *Celestial Navigation* by Dominique Prinnet: <https://books.friesenpress.com/store/title/119734000014535607/Dominique-F-Prinnet-Celestial-Navigation> Available in printed and ebook formats. These are the recommended texts for Sail Canada Celestial Navigation (and what I used myself to learn celestial),
- Dominique’s separate exercises book is available here: <https://books.friesenpress.com/store/title/119734000028555333/Dominique-F-Prinnet-Celestial-Navigation-Exercises-for-Class-and-Home-study>. Available in printed and ebook formats. Dominique provides significant additional details and resources here: <http://www.marinenavigationbooks.com>

Challenging the Celestial Exam

If you wish to obtain a certification, you need to write, or “challenge” the exam. In the case of ASA 107 or 117, as noted above, you can write the exam with BOSS before, during or after your 108 Offshore Course. However, you cannot be certified for 108 without having 107 or 117 on your ASA profile.

If you plan to write the 107 exam with BOSS, you need to acquire a copy of the NGA 925 Position Plotting Sheet, which is necessary to plot your DR and the positions calculated during the exam. An internet search for “NGA 925 Position Plotting Sheet” will provide you with a list of retailers from whom you can order a copy.

In the case of Sail Canada, you can “challenge” the exam under the supervision of a qualified Sail Canada celestial instructor. Use the procedure note above to find an instructor near you. Alternatively, contact me at rob.m@barefootoffshore.com, and I can help make a contact for you.

Coming soon

We are working on an Emergency Navigation course that will combine the skills and knowledge covered in ASA 117 with additional resources relevant for emergency navigation if all of your electronics fail when you are offshore. Additional details will be available in August, 2021.

We are also working on a course called “Boating with Mobile Devices”, which included commentary on celestial-related apps that run on mobile devices.

Other Relevant Online and Offline Resources

To implement celestial navigation, you need at a minimum:

- A nautical almanac (or equivalent)
- Sight reduction tables
- Sight reduction forms and plotting sheets

Online / digital resources

When I first considered celestial navigation back in the 1980s, everything was on paper. For today’s celestial student or practitioner, just about everything you need is available as a digital download, for free.

Nautical Almanac: free online versions for various years can be downloaded here: <https://www.thenauticalalmanac.com>

Everything you need for 2021: https://thenauticalalmanac.com/Everything_You_Need_For_2021.html Provides links to the almanac, various corrections tables, sight reduction tables, star data, sight reduction forms, etc.

Another free online version of the nautical almanac and other resources: <https://www.nauticalalmanac.it/en/navigation-astronomy/the-nautical-almanac.html>

Forms: Tony Pattison of YNotSailing.com supervised my celestial exam. He has designed various useful forms: <https://www.ynotsailing.com/Celestial/tools.html>

Offline / paper resources

While I will provide hard copies for purposes of the Offshore Course, if you are subsequently going offshore on your own, you will need paper copies in case your electronics fail. While there are many sources, the specialized online retailers I have used for almanacs, sight reduction tables, charts, etc are:

US source: <https://mdnautical.com>

Canadian source: <https://nauticalmind.com>