



## **Safety Thursday**

### **Nautical Charts**

**June 13, 2013**

Although chart plotters, laptops and handheld GPS are ubiquitous in today's sailing environment, paper charts are the ultimate backup navigation tool. GPS is great (and indeed is also required by the Race), but batteries fail, devices break, and satellites are on occasion unavailable or unreliable. Charts carry none of these downsides.

The Mac Safety Regulations (MSRs) require that each boat carry paper charts applicable to the Race. For the Chicago Mac, paper versions of NOAA Chart 14901 (Lake Michigan) and either 14880 (Straights of Mackinac) or 14881 (Mackinac Island) must be carried aboard.

Most boats also carry electronic charts in a laptop or chart plotter. While beyond the scope of this email, we strongly recommend that you ensure that the electronic charts onboard are up to date. NOAA frequently updates these charts (though less frequently than in the past due to budget constraints). Be sure your boat's electronic charts are up to date. Much of the discussion below applies to both electronic and paper charts.

Now, let's turn to paper charts. In the US, charts are produced by NOAA. See <http://www.nauticalcharts.noaa.gov/staff/chartspubs.html>. Compared to other countries, our charts are extremely affordable and accurate. A good

introduction to nautical charts is available at [http://www.nauticalcharts.noaa.gov/mcd/learn\\_aboutcharts.html](http://www.nauticalcharts.noaa.gov/mcd/learn_aboutcharts.html)

Charts can be bought in one of two formats:

A. Traditional paper charts - these are updated periodically and have edition numbers and dates in the lower-left corner of the chart. The date is important - do not sail with an outdated chart. <http://www.nauticalcharts.noaa.gov/mcd/paperchart.html>

B. Print-on-demand charts. These charts are updated virtually to the date that the order is placed. They are generally more current than traditional paper charts. <http://www.nauticalcharts.noaa.gov/pod/POD.htm>

These charts can be ordered through NOAA-authorized vendors. The links above will take you to sites which link to authorized vendors.

A third option for paper charts is print-at-home, called 'Booklet Charts.' These charts can be downloaded and printed from <http://www.nauticalcharts.noaa.gov/staff/BookletChart.html>. However, be aware that the scale for these may not be accurate, depending on your printer, and the large number of pages may cause printing at home to be not as cost-effective as ordering a printed chart from a vendor.

A great advantage of Booklet Charts is that they're free. While the MSRs require paper charts 14901 and 14880/14881, Booklet Charts allow you to download and print or keep aboard other charts. The author of this article has Print-on-Demand versions of 14901, 14880 and 14881 on board to comply with the MSRs, but keeps PDF versions of a wide variety of Booklet Charts on his iPad in case of a need to go into an unfamiliar port. Remember - to comply with the MSRs, the charts must be printed on paper!

To help you interpret the symbols on the chart, you should download and save or print a copy of the free U.S. Chart No. 1: Symbols, Abbreviations and Terms used on Paper and Electronic Navigational Charts from <http://www.nauticalcharts.noaa.gov/mcd/chartno1.htm>. This will help you interpret virtually every symbol on the chart.

Other important resources:

1. The US Coast Pilot. This is a series of books covering the entire US coastline with important information on coastal navigation. They cover coast descriptions, anchorages, water levels dangers, and a lot of other information useful to navigators. They are updated weekly and free to

download. CP6 covers the Great Lakes and can be downloaded from here:  
<http://www.nauticalcharts.noaa.gov/nsd/cpdownload.htm>

2. US Coast Guard Light Lists. This is a detailed list of navigational aids such as lights, buoys, beacons and the like. Produced by the USCG, the Great Lakes Light list can be downloaded from <http://www.navcen.uscg.gov/pdf/lightLists/LightList%20V7.pdf>

Both of these are excellent resources for the navigator.

There are a wide variety of inexpensive coastal navigation courses available online. One free one is available at <http://www.sailingissues.com/navcourse0.html>, but others are available for less than \$50.00. It is a worthwhile exercise for all distance sailors to be able to understand how to fix a position, chart a course, and determine speed. These skills apply equally to paper charts and electronic navigation methods.

A few points to keep in mind:

1. NOAA, like all Federal government agencies, is running on leaner budgets than in the past. Thus, charts may not be as up to date as you'd like. Always keep a safe lookout and apply prudent judgment and seamanship. To learn more about updating, visit [http://www.nauticalcharts.noaa.gov/mcd/learn\\_chartupdate.html](http://www.nauticalcharts.noaa.gov/mcd/learn_chartupdate.html).

2. Water levels. All depths indicated on nautical charts are reckoned from a selected level of the water called the sounding datum (sometimes referred to as the reference plane). Check the chart; the datum is shown. In the Great Lakes, the Plane of Reference is the International Great Lakes Datum (1985), and depths are generally in feet (as opposed to fathoms or meters). Depths shown on charts are the least depths to be expected under average conditions. Since the chart datum is generally a computed mean, the depth of water at any particular moment may be less than shown on the chart, particularly in years with low water levels. For more about soundings, visit [http://www.nauticalcharts.noaa.gov/mcd/learnnc\\_soundingdatum.html](http://www.nauticalcharts.noaa.gov/mcd/learnnc_soundingdatum.html).

*Note: The purpose of this article is to highlight some of the Mac Safety Regulations and how your crew can race the Mac as safely as possible. As always, ultimate responsibility for the safety of the crew and the decision whether to race or to stop racing is that of the skipper (RRS4, MSR2). This email is meant as a courtesy only and you should always refer to the Race Documents section of the website for the Notice of Race, Sailing Instructions and Mac Safety Regulations, which govern the race.*