Safety Thursday Series Issue 3

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Automatic Identification System (AIS) – collision avoidance and vessel tracking

If you've completed more than a handful of Mac races, you've probably spent some watchful hours on a moonless night or in heavy fog. You had consciously weighed the cost, windage and power requirements of radar and wished for a better way of avoiding the risk of colliding with unseen vessels.

An increasing number of Mac racers have addressed this issue by including Automatic Identification Systems as part of their electronic instrumentation and safety systems. What was once an international standard requirement for ocean-going commercial vessels is now an affordable option for recreational boaters.

The same post-Titanic organization that gave us the International Convention for the Safety of Life at Sea (SOLAS) standards introduced the new "AIS Lite" Class B standard in 2007. Since that time, vendors have produced products that display much more data than binoculars, radar or your foredeck crew ever could.

Automatic Identification Systems provide significant information about AIS-equipped vessels including Name, Speed (SOG), Course (COG), position (lat/lon) and true heading -- important information to use when contacting or avoiding collisions with nearby vessels. An AIS device will use the same unique MMSI identifier (Maritime Mobile Service Identity) that is required when registering your VHF/DSC radio or EPIRB (see Safety Thursday Issues 1 & 2).

Installation

Typical recreational boaters will choose AIS Class B Transceivers to both send and receive data, Some systems offer a 'receive-only' switch (the 'stealth option') which offers the ability to save on battery power or withhold your location from other racers (and unfortunately also large freighters). The AIS unit is most-often pre-programmed with your boat information.

An AIS device requires both a GPS and VHF antenna. The GPS antenna provides the unit with your latitude and longitude and calculates your ground speed and course. This antenna is dedicated to the AIS unit alone. The VHF antenna is used to communicate with other

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nearby vessels and land-based AIS stations. You use an antenna splitter to share it with your existing radio antenna as the device uses VHF Channels 87 & 88.

Some AIS units come with dedicated displays. Most units are standalone boxes that will integrate with existing chartplotters or on-board computers via NMEA 0183 hi-speed (38.4kbps) or NMEA 2000 protocols. NMEA 2000 is often preferred as it provides for better future system improvements.

USAGE: Tracking

You may have already imagined AIS as a water-based Lo-Jack that can identify your boat's current location on-demand or viewing this information on the internet. In fact, many AIS systems throughout the world report their data to various web sites. These websites overlay the data they collect onto maps. You can see the current location of a single vessel, a fleet, or all the vessels in a geographic area. Often, course tracks over a given time period are available.

USAGE: Collision Avoidance

Should your chartplotter be so equipped, set up your alarm parameters and your system will sound when it senses another AIS equipped vessel that may collide within a given time or distance range.

Upon hearing a loud fog horn you may become concerned that its associated vessel might be an issue for you. Installing an AIS device could allow you to identify the vessel on your chartplotter. AIS would allow you to hail the target vessel on channel 16 by name and instruct them to switch to a free VHF channel. You could then identify your boat, confirm they see you and ask if they plan to stay on their present course. Follow-up with appropriate action.

After you do this in two or three situations, you will simply rely on the screen information. You will be confident that you no longer need to hail the other vessel. In the end, you can simply behave as two ships passing (safely) in the night.

GOVERNMENT WEB SITES FOR MORE INFO

http://www.navcen.uscg.gov/?pageName=AISmain
http://www.imo.org/ourwork/safety/navigation/pages/ais.aspx

AIS TRACKING SITES LIST

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http://www.marinetraffic.com/ais/
http://www.vesseltracker.com/en/Area/greatlakes/Map.html
http://shipfinder.co/

Class A vs Class B

http://www.navcen.uscg.gov/pdf/AIS/AIS_ClassA_B_Comparisons.pdf

Special thanks to fleet member Dale Cohen for writing this installment of Safety Thursday for us!

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.

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