



# A.I.S.

## A Multifaceted Navigational Safety Device

By Capt. Henry E. Marx

AIS is an acronym for a relatively new navigational device—Automatic Identification System—which is invaluable for avoiding collisions, vessel identification and man-overboard recovery. The intent of this article is to explain why any yacht or small vessel transiting inshore waters should have a full AIS Class B unit properly programmed and operating.

As inferred above, there are two classes of AIS Transponders: Class A Transponders, which are mandatory for all commercial vessels over 300 gross tons or carrying passengers; and Class B Transponders, which are simpler and cheaper for vessels not under the SOLAS mandate transmit at two watts and do not have all the bells and whistles of the Class A units. These transponders are available two ways. The Listen Only AIS Class B transponder receives all AIS notifications from surrounding vessels and displays the information on your chartplotter, or digitally on your VHF Radio. This unit is cheaper, but does not notify anyone that you are there! The Full AIS Class B transponder not only receives the incoming information from vessels in your area, but also transmits your position, heading, speed, location, MMSI Number and vessel name to other AIS-equipped vessels. Class B transponders will normally provide vessel name, MMSI Number, heading, speed, geographic position on the chartplotter and size.

### NAVIGATION SAFETY

As many of you know, a vessel under 65 feet without a radar reflector is virtually invisible at night or in restricted visibility to a commercial vessel. As most commercial vessels and yachts over 40 feet are now carrying AIS, you immediately show up on their chartplotter of these vessels as a contact.

Here's a real-time example: About 2300 Hours



Watchmate AIS Transponder

one evening in July, I was rounding Point Judith, RI, while returning home to Western Long Island Sound from Newport, RI. As I approached Point Judith from the north, I saw two tugs and tows westbound from the Cape Cod Canal heading for New York. One tow was about 5 NM offshore—not a collision threat—but

the other was about 1.5 NM off my port bow and angling in towards the Point Judith Lighthouse, not heading west for New York.

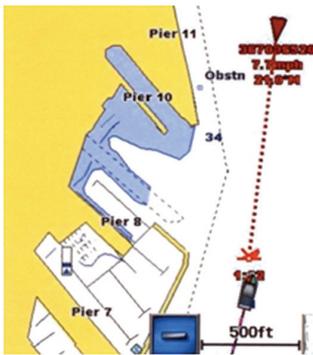
Using the AIS interface on my Garmin chartplotter, I accessed the vessel data and verified her speed, heading and vessel name. This information enabled me to call the proper tug and discuss the pending situation with her captain. It turned out he was about to turn left for New York, and there was no collision danger; however, without the AIS information, I would have had trouble identifying the vessel to properly call for a good solution to the rapidly changing situation. Also, the "picture" would not have been as clear regarding the pending situation.

AIS brought two big safety advantages here: When there are multiple contacts on your screen, you can identify the problem vessel and call her by name, not just "That tug boat off my bow" when there are two or more tugboats out there! And, everyone sees everyone else!

### STANDARD AIS PROCEDURE

After confirming the tactical situation on your radar and visually, if available, you can access the target contact's data and take appropriate action:

- Review the apparent Closest Point of Approach (CPA): To determine the risk and to see if any action is necessary.



Typical Chartplotter AIS View

- Access the contact name: With touch screen chartplotters, this normally means merely touching the contact on the screen.
- Call the contact on VHF channels 13 or 16: Identify yourself and ask the vessel if they feel any action is required.

- Take such action: If the other vessel is not responsive, take unilateral action to avoid a collision!

I might add there is a “fun aspect” to AIS: When you see a large yacht, you can look them up on your AIS and settle the argument of how big she really is and how fast she is travelling as this will be included in the AIS data.

## MAN OVERBOARD RECOVERY



As mentioned earlier, AIS can help with man overboard recovery using the McMurdo S20, a personal AIS transmitter.

This is a belt-worn or pocket-carried transponder that could save your life! Should you fall overboard from an AIS-equipped vessel, after inflating your life jacket, merely activate the transponder and hold it up over your head. You will immediately appear as a special icon on the screen of every AIS-equipped vessel within VHF radio range (line of sight). Your vessel can use that location on the chart plotter as a waypoint and steer back to pick you up. Other vessels can also respond and possibly, knowing where you are, not run over you.

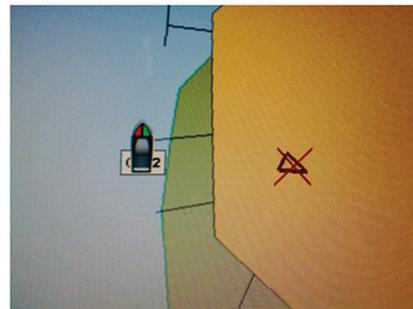
## SIDE NOTE ON INSTALLATION

AIS is a VHF radio transmission system, meaning it is “line of sight only.” Therefore, you want the AIS radio antenna as high up as reasonably possible on

your boat. That way you will be “seen further” by oncoming traffic. To calculate your visual or VHF radio range distance in nautical miles to the visible horizon, use the following formula:

*The square root of the height in feet X 1.17 = distance to the horizon with visibility unlimited in nautical miles.*

In practical applications this means that a rail-mounted antenna, mounted 5 feet above the water has a visual/VHF radio range of only 2.6 N.M. Conversely, a masthead-mounted antenna set 55 feet above the water will enable a visual/radio range of 8.7 N.M.



X Marks the spot.  
The view of a MOB signal on an AIS enabled Chartplotter

## NAVIGATOR NEEDS

In summary, it is 2014, and we have many advantages over the Age of Discovery navigators:

- Good charts, both paper and electronic, with which to navigate.
- Electronic depth finders to warn us when we are getting into trouble.
- Radar to show us what is out there in the dark or in limited visibility.
- Reasonably reliable weather reports to let us plan safe voyages.
- EPIRBs and PLBs to enable rescuers to find us quickly.
- Affordable life rafts that will keep us alive until rescued.

Let’s be prudent navigators and ensure that our vessels are equipped with all that we need to have a safe and happy voyage/vacation.