Virtual AIS Aids to Navigation   June 2016

What is AIS?

The Automatic Identification System (AIS) enables ships to see and identify other nearby vessel traffic. In the same way that aircraft broadcast information about themselves to air traffic controllers, ships with dedicated VHF AIS transceivers can transmit and receive ship information, such as the ship size, draft, position, speed, direction, cargo, destination and other information. Ships equipped with an AIS-enabled display can see the positions of other ships up to 20 nautical miles away, even if they are behind islands or other obstructions that may block radar. More information about AIS is at www.navcen.uscg.gov/?pageName=AISmain.
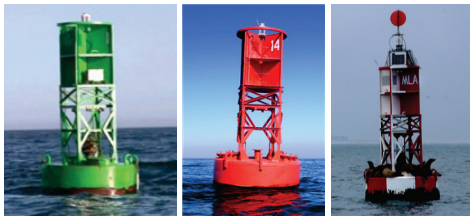
How is AIS used on aids to navigation?

AIS transmitters can also be affixed to a floating or fixed aid to navigation (AtoN), such as a buoy, beacon, or light. The AIS transmission provides the position and purpose of an aid, such as a port or starboard lateral buoy, even before it is close enough to be visible from the ship or to provide a radar return. T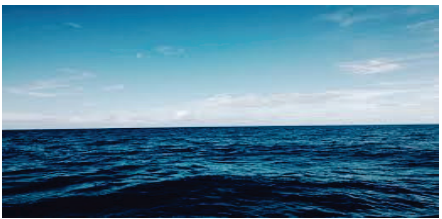his can help mariners confirm their ship's position or to prepare to make a turn that is based on passing a particular aid. AIS AtoNs are shown on NOAA charts with a magenta radio circle and an "AIS" label, as shown in the table below.

What is a virtual AIS aid to navigation?

A virtual AIS AtoN is a signal broadcast from an onshore AIS station to display at a particular location on AIS-enabled Radar, Electronic Chart Display and Information System (ECDIS), or Electronic Charting System (ECS) displays, but for which no physical AtoN at that position exists.

A few uses of virtual AtoNs include environments where buoys are moved seasonally, such as in sea ice, or where a marker needs to be placed quickly, such as to mark a new isolated danger or wreck. NOAA charts depict virtual AIS AtoNs with a magenta radio circle and a "V-AIS" label, as shown in the table below. The purpose of the aid is indicated by the "top mark" above the central position circle. A complete list of all virtual AIS AtoN types and the symbols used to depict them on paper charts and ECDIS is available at http://www.nauticalcharts.noaa.gov/mcd/updates/ais_aton.html.
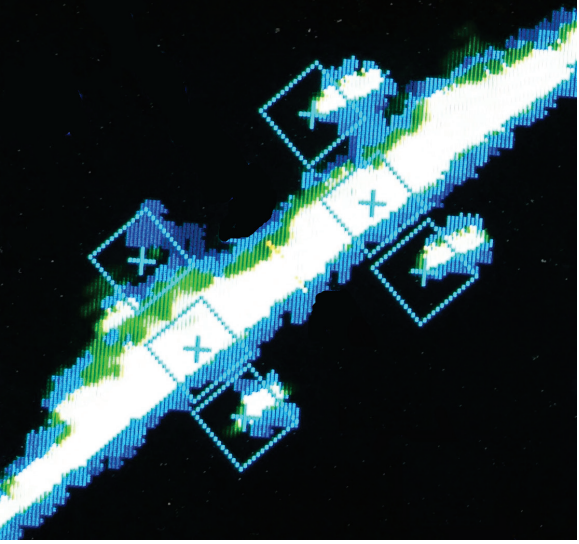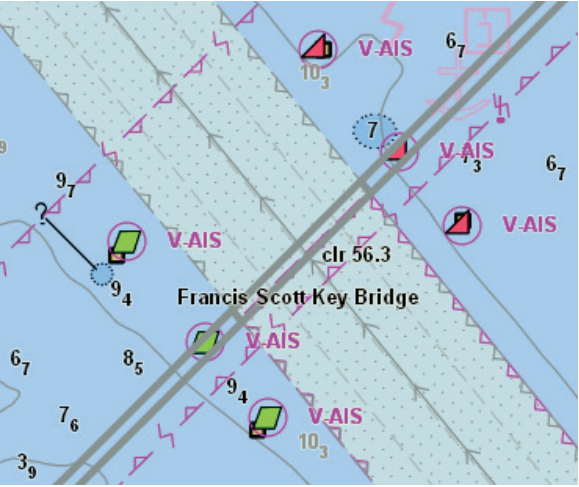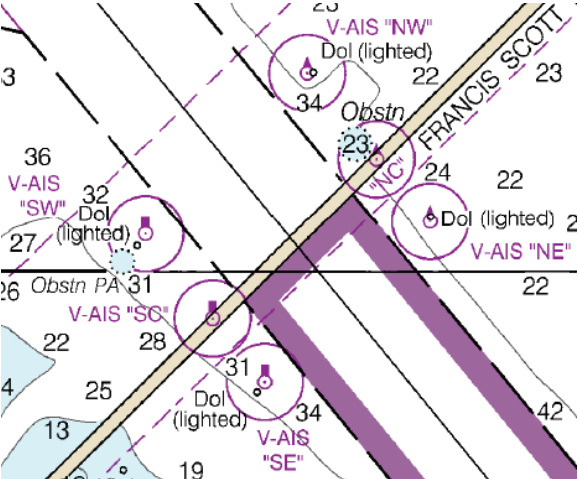
Paper Chart Symbol *			Type	What they look like out the window of a ship's bridge.
Green Lateral Buoy	Red Lateral Buoy	Safe Water Mark		
			Physical non-AIS aid	
AIS	AIS	AIS	Physical AIS aid	
V-AIS	V-AIS	V-AIS	Virtual AIS aid	

* These examples are based on the IALA-B buoyage system that is used in the 50 states and the Caribbean. In the IALA-A system, used in U.S. territories in the South Pacific, the square and triangle top marks shown on V-AIS aids are switched with each other. Refer to the graphic at Q-130.1 in U.S. Chart No.1 for more information about IALA buoyage regions.

What do virtual AIS AtoNs look like in navigation systems?

The images below show examples of how three different navigation systems represent virtual AIS aids to navigation. The images show a portion of the Francis Scott Key Bridge in Baltimore, Maryland where six virtual AIS AtoNs are used to mark the passage under the bridge. The three to the southwest are port hand lateral marks, the three to the northeast are starboard hand lateral marks.

	AIS Enabled Radar Display The V-AIS AtoNs are shown with diamond shaped AIS "target" symbols.
	Non-AIS Enabled ECDIS Display of ENC Note: On an AIS enabled ECDIS, the blue diamond target symbols seen in the image above would be displayed on top of the V-AIS AtoN symbols shown at left.
	Paper Chart 12281 and ECS Display of Raster Nautical Chart Note: This image and the EDCIS image above both show that the shore based AIS station is broadcasting the position of each of the outter virtual AIS AtoNs on top of (or nearby) the positions of each of the four lighted dolphins.