

EBA Position Statement AIS Virtual Aids to Navigation

Executive Summary

The European Boating Association¹ (EBA) recognises the value of Automatic identification System (AIS) Aids to Navigation (AtoN) to mark newly identified hazards on a short term basis until a physical AtoN can be deployed and to provide additional information for the mariner.

The EBA supports the use of virtual (AIS) AtoN to provide navigational guidance which is only applicable to those vessels which are required to carry the equipment to receive the virtual AtoN.

The EBA does not consider virtual (AIS) AtoN to be a viable permanent alternative to the use of physical AtoN for marking navigational hazards and urges caution regarding the use of AIS to convey information which needs to reach recreational boats including those which are not compelled to carry AIS onboard.

Background

The introduction of AIS is a major development in the provision of AtoN. It has allowed service providers, such as lighthouse authorities, to use the AIS infrastructure to simulate AtoN and to provide additional navigational information for the mariner.

International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) defines a Marine Aid to Navigation as, “means a device, system, or service, external to a vessel, designed and operated to enhance safe and efficient navigation of all vessels and/or vessel traffic”.

AIS AtoN can be either “Synthetic” or Virtual”; the difference is explained below.

Synthetic AIS AtoN

Synthetic AIS AtoNs are broadcasts from a base station for an AtoN that physically exists. Status and other information is collected from systems on the buoy and passed by radio link to an AIS base station which then broadcasts that information so that it appears to come from the location of the buoy itself. AIS enabled chart plotters, radar or other navigation displays on the vessel can show the information at the location of the charted object. This might include:

- Position
- AtoN operational status
- Met/hydro information if equipped with suitable sensors:

The Key feature of Synthetic AIS AtoNs is that a physical AtoN is always present. Because of this, the use of Synthetic AtoN is not a problem for Recreational Boating² and they will not be considered further in this position paper.

Virtual AIS AtoN

The ability to provide Virtual AIS AtoNs is one of the most significant technical developments for service providers, but is only possible through the deployment of a network of AIS base stations around the coast / along the waterways and most importantly the installation of onboard equipment that has the capability of decoding and displaying the data; typically Application Specific Messages relating to virtual aids to navigation in an “Aids-to-Navigation Report”. This message provides details of the Name, MMSI, Type and Position of the AtoN.

Virtual AIS AtoNs can provide a near-instantaneous warning to the mariner of a new danger before physical AtoNs are deployed. Virtual AtoNs applications include:

- New wreck
- Uncharted hazard
- Virtual shipping lanes
- Floating debris

They are usually deployed only until they can be replaced by a physical AtoN or the navigational hazard is charted or removed.

Virtual AIS AtoNs do not physically exist and therefore are only visible on systems that can display the virtual AtoN symbol and information.

Onboard AIS Equipment

Fundamentally, AIS is divided into two classes – Class A and Class B – depending on the AIS transceiver^a transmitting the AIS information. There is a great difference between the two classes, both in terms of extent, complexity and price.

Class A AIS transceivers (SOLAS Compliant) transmit information every 2 to 10 seconds while underway (every 3 minutes while at anchor) at a power level of 12.5 watts. Static and voyage related vessel information, such as the vessel's name, are transmitted every 6 minutes. They are required to have a DSC receiver for channel control, external GPS, heading, and rate of turn indicator. Class A transceivers also transmit and receive safety-related text messages.

Class A AIS has been developed for use on the Inland Waterways of Europe and is known as Inland AIS. Inland AIS has full AIS Class A functionality but also has a number of supplementary functions designed specifically for use by inland waterways vessels.

^a A transceiver is a device that both transmits and receives analogue or digital signals (eg VHF radio). A transponder is a device that automatically responds (transmits) to a specific incoming (received) signal (eg RACON). A “receive-only” device can receive radio signals or data but does not have the circuitry to transmit (eg a car radio).

Class B AIS transceivers transmit information every 30 to 180 seconds at a power level of 2 watts. Static data, such as the vessel's name, is transmitted every 6 minutes. The GPS is internal and a DSC receiver and heading are optional. A number of safety-related text messages are not available as standard, they can only be pre-configured into Class B AIS transceivers not operator selected.

AIS information from a Class A transceiver will always be prioritized and, thus, be shown to other ships in the area, whereas AIS information from a Class B transceiver will not be shown until or if there is room on the AIS channel.

It should be noted that AIS “receive-only” sets are common and are fitted to many recreational boats. These do not transmit data about a vessel they only receive position, name and call-sign data from other vessels fitted with AIS.

Mandatory carriage requirements

The United Nations Safety of Life at Sea Convention Chapter V (SOLAS V) only requires the following vessels to be equipped with AIS:

- All ships of 300 gross tonnes and upwards engaged on international voyages;
- Cargo ships of 500 gross tonnes and upwards not engaged on international voyages;
- Passenger ships irrespective of size.

On the European inland waterways, increasingly vessels of 20m in length or more or over 100m³ (L*B*D) are required to be fitted with Inland AIS equipment but a significant proportion of vessels are not required to carry AIS and are reliant on physical AtoN to navigate safely.

Concerns

The EBA has two concerns with the use of Virtual Aids to Navigation:

- Non-SOLAS Vessels and vessels under 20m in length or under 100m³ (L*B*D) on the Inland Waterways of Europe are encouraged to voluntarily fit and use AIS Class B. Class B AIS has however been designed primarily to provide basic AIS navigation (speed, heading) and vessel (call sign, MMSI) data in a cost effective, reliable and user-friendly product that does not include the comprehensive data required for commercial shipping or the supplementary functions of Inland AIS. It is likely therefore that AIS Class B sets will not be able to receive and decode the Aids to Navigation report contained in Application Specific Messages relating to virtual AIS AtoN.
- Not all vessels are required to carry AIS. Those which do not voluntarily fit AIS cannot display Virtual AIS AtoN.

The EBA Position on AIS Virtual Aids to Navigation

Physical hazards to navigation must be marked by the physical presence of an AtoN.

Virtual AIS AtoN should only be used where the information transmitted is only applicable to those vessels which are compelled to carry AIS or to temporarily mark a new hazard (e.g. a wreck) until the physical AtoN is deployed.

All authorities must be aware that by following the recommendation to voluntarily fit AIS Class B, vessels may be equipped with AIS, but still not have the capability to receive virtual AIS AtoN.

Notes

¹ European Boating Association

The European Boating Association, Europäischer Sportschiffahrtsverband, Association Européenne de Navigation de Plaisance, is a civil, not for profit association of recreational boat users' organisations, founded in 1982, and established as an Unincorporated Association whose members agree to be governed by its constitution. The EBA member organisations (see <http://www.eba.eu.com/participantorgs>) collectively represent in excess of 1.5 million recreational boaters and an estimated 20 million active participants.

The purpose of the EBA is to represent the mutually agreed common interests of national recreational boat users' organisations in Europe, and in particular to:

- Coordinate and develop recreational boating activities in Europe by exchange of information, and action on matters of mutually agreed common interest.
- Promote the practice of all activities on the water, promoting and exchanging knowledge and experience between recreational boat users' organisations in Europe.
- Represent EBA members in environmental, regulatory and technical matters affecting their safe enjoyment of recreational boating activities on the water.
- Encourage the safe, unhampered and environmentally sustainable use of recreational boats on all European waters.
- Provide the link between the European institutions and EBA Members for consultation and information on proposed EU directives and regulations.
- Provide the link between other relevant global and regional organisations and EBA Members.

² Recreational Boating

The EBA is the European representative organisation for recreational boating.

There is no general consensus as to the terminology used to describe the types of boat used for "recreational boating", with expressions such as "recreational craft" or "private pleasure craft" being used to describe only subsets of such types of boat for the purposes of specific pieces of EU legislation. "Recreational boating" also includes the use of beach- or slipway-launched water toys such as wind surfers, sailing dinghies, inflatable boats and personal watercraft.

Boats used for “recreational boating” may be small or large, propelled by sail and/or power and used on inland waters and/or at sea. “Recreational boating” at sea can range from close-to-shore to trans-oceanic.

“Recreational boating” also includes the use of such boats privately owned and operated by the owner, hired (on bareboat or skippered charter) or used to provide a service (such as training or race participation).

In the context of this document, therefore, the EBA considers “recreational boating” to mean using boats that are designed or adapted for sport or leisure, whether propelled by sail and/or power, for the purposes for which they are designed or adapted.