

## The establishment of AIS as an Aid to Navigation

We would like to draw your attention to a recently approved IALA guideline (IALA guideline No. 1062) on “The establishment of AIS as an Aid to Navigation. The whole IALA paper is attached as ‘IALA\_guidelines\_no\_1062\_AIS\_AtoN.pdf’.

### Background

The IALA guideline points out how AIS could be used as an Aid to Navigation (AtoN) and to briefly summarise the guideline it mentions different types of AIS as an AtoN. These are:

- **Real (Physical) AIS AtoN** – A ‘real AIS AtoN’ is one that is physically located on the AtoN.
- **Synthetic AIS AtoN** – There are two different types of ‘synthetic AIS AtoN’ – monitored and predicted. Basically both transmit the AIS message from a Base station and the position of the message is shown at the intended position of a physical AtoN.
- **Virtual AIS AtoN** – A ‘virtual AIS AtoN’ is transmitted as a message for an AtoN that does not physically exist and could be used to temporarily mark new dangers or obstructions or replacing existing buoys. Virtual AIS AtoNs are divided into different types and follows the ordinary IALA system. There are Lateral Marks, Isolated Danger Marks, Safe Water Marks, Cardinal Marks and Special Marks (see also ANNEX I).

### Analysis

The Swedish Maritime Administration and the Swedish Transport Agency have discussed this specific IALA guideline and many questions arise especially regarding ‘Virtual AIS AtoN’. If the use of such systems is widely spread, it will probably have great impact on methods of navigation. There are reasons to believe that this will be the case since the guideline points out that virtual AIS AtoN could be used ‘where installation of physical AtoN is technically or economically difficult’ (Chapter 4 – Function of AIS ATON).

As virtual AIS AtoN come into use the different types of virtual AIS AtoN need to be portrayed in both paper charts and ENC’s. Even if the AIS target will be displayed (a blue diamond with a plus sign in the centre) in the vessels ECDIS/ECS or Radar within VHF-range there will be a need to see the virtual AIS AtoN when planning the voyage. The standard for paper

charts (M-4), the future version of the ENC product specification (S-101) and the adherent presentation library needs to be changed regarding this issue. In the IALA guideline No 1062, chapter 11 points out that ‘Particular issues arise in relation to virtual AIS. Effective utilization of virtual AIS needs an internationally accepted standard on symbols defined by type so that the user can clearly identify the AtoN area of interest’. The same chapter also mentions that ‘AIS symbology on navigational charts is governed by IHO standards’.

There could be different options to solve the issue of portrayal. One option could be to use the top marks of the different IALA-types and the AIS diamond symbol. The colour should be magenta to indicate that there is no physical structure. Normally a red circle would be used to symbolise transmitting objects, but in order to reduce unnecessary clutter in the ECDIS display and in the paper chart this has been removed. A starboard lateral mark would then be portrayed as in figure 1.



**Figure 1 - Portrayal of a virtual AIS AtoN - starboard lateral mark.**

When the vessel approaches within VHF-range the blue diamond symbol is displayed on top of the existing symbol in the ECDIS. Since the ordinary positioning symbol for buoys and beacons is used in the ENC the blue diamond symbol does not interfere with the ‘ENC symbol’. See figure 2.



**Figure 2 - Blue AIS diamond symbol on top of the ‘ENC symbol’**

The same portrayal could also be used in the paper chart.

### Questions

There are some questions that ought to be clarified before any further actions are taken regarding ENCs and paper charts:

- Have there been any investigations within the IMO about how replacement of existing buoys with virtual AIS AtoN influence navigation?
- Will there be a separate work item in the development of the IMO e-Navigation strategy regarding this issue?

- Have there been any discussions regarding Virtual AIS AtoN between IALA and IHO? Has the IHO – Hydrographic Services and Standards Committee (HSSC) taken any actions to handle this issue?
- If the virtual AIS AtoN is permanent would it not be possible to use ‘virtual symbols’ in the ENC’s instead of transmitting AIS message

NHC is invited to note this information and if found suitable, identify appropriate actions.