

## Display of Archipelagic Sea Lanes

### Comments on proposals of UKHO from 13. Nov. 2003

Dear Andrew,

Based on comments I received from various members of the C&SMWG and with my own opinions added I would like to reply to the proposals for the ASL:

#### 1. General

The selection of ASL symbols for paper charts must not be made in isolation from options for the future depiction of ASL on ECDIS. Because of the continuing existence of multi-fuelled ECDIS providing both ENC (S-57) and RNC (ARCS/Seafarer) generated images, symbols for the same objects on the two different must be recognisably similar if not identical. Note that the paper chart still plays a significant role in ships navigation as back up for ECDIS operation (although with constantly decreasing importance *as ECDIS reliability increases*).

#### 2. Design of objects for ASL coding

As you know the ECDIS model is based on the strict separation between the S57 objects which contain the hydrographic/administrative information and the display rules to be applied to display these objects on the ECDIS. For the matter in question this leads to the need to identify objects to convey the ASL information which are appropriate for display on the ECDIS.

It seems that there are actually four information components to be linked to appropriate objects:

- the area of the ASL;
- the axis line of the ASL area;
- the boundary line between ASL and the 10% ASL exclusion zone;
- the area of 10% ASL exclusion zone.

Note that the definition/coding of ASL and the exclusion zones as areas is absolutely necessary to trigger ECDIS automated monitoring functions.

Defining appropriate objects representing ASL for the purpose of their encoding has to be considered by TSMAD before the development of symbolisation of ASL on ECDIS can really start. It is therefore up to TSMAD to decide whether

- to make use of existing object definitions, or
- to introduce new line and area objects.

Depending on this decision, the C&SMWG will then start the discussion of possible display options for ASL and ways to introduce them into onboard installations.

### 3. Possible symbology

Due to the relatively large size of the paper chart, which provides both an overview of the whole area and at the same time the details of the part of immediate interest the mariner always gets a general impression about the areas which are covered by the particular ASL. In contrast to this the ECDIS allows the mariner to zoom in and out from the area on which the display is centred. Especially after zoom in it could well be that the displayed part of a sea area does not contain any border line or the axis of the ASL. Therefore it is necessary to identify areas in ECDIS by a special pattern or centred symbol (a special ECDIS feature) and thus to deviate from the area depiction of the paper chart. The mariner using ECDIS needs to know both where he is allowed to go and where he is not permitted to go. Applying this analogy to the existing symbolization of areas on the paper chart where the mariner is requested to navigate with caution, in ECDIS the areas in question should be identified with so called "Centred symbols". Potential candidates of the existing symbology (see examples in attachment) for the display of the ASL and the exclusion zone are

- SY(INFARE51) 'area with minor restrictions or information notices' for the ASL, or
- SY(CTYARE71) 'Cautionary area with further information' for the exclusion zone.

The coded INFORM attribute found by cursor enquiry would tell for 'information notice' being the ASL and the 'further information' being that it is an exclusion zone.

Alternatively new alphabetical centred symbols using the letters "ASL" and "EZ" could be invented if TSMAD would decide for the introduction of new objects/attributes in addition to the existing S-57 object catalogue.

For the ASL axis line it seems that a new symbol must be introduced for ECDIS. The proposed symbolization for the paper chart includes characters which are normally avoided within S-52, but could be adopted in this case.

The boundary between the ASL and the 10% exclusion zone is suggested to be symbolized by a line with filled semicircles on a pecked line in magenta. The semicircles point to the inside of the 10% exclusion zone. This emphasis on the exclusion zone appears to be the wrong way around. In order to indicate the boundary of the ASL as the area to be available for navigation, the symbolized boundary line should point to the inside of the ASL – which would be in line with the general philosophy of boundary symbols in S-52 and also in INT 1 symbols such as IN 2.1. Moreover, one should keep in mind that the variety of simple geometric primitives like dashes, semicircles, "T" shapes, etc. to be used as intuitive symbolisation for important features is limited. The designation of the well known "warm front" symbol for such a seldom encountered feature of relatively low importance for the mariner like an ASL seems to be a waste of such a powerfully intuitive geometry. Keeping in mind the growing number of information sources which are going to appear on the ECDIS screen (ARPA, AIS, VTS, weather routing), we should carefully conserve the display options which are not used already for important features – and the "bowler hat" line is a valuable one of those! It is therefore suggested to make use of a line symbol (see examples in the attachment) like

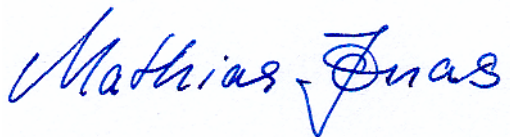
- LC(CNTARE51) or,
- LC(CTYARE51)

for the boundary between the ASL and the 10% exclusion zone.

#### 4. Conclusion

There is a natural tendency to treat every new chart feature as a special case and to try to find the best possible symbolization for it, without regard to its importance relative to other existing or possible future features. IMO's selection of the 'warm front' linestyle as ASL boundary is an example. It is no longer easy to dream up new distinctive symbols and line styles. It is high time to consider symbology for ECDIS at the same time as paper charts. It is high time for integration on all sides, IMO & IEC for 'Navigation Symbology', AIS etc / IHO paper chart & RNC / IHO ECDIS.

In the same way as for the paper chart world possible options of symbolisation in the ECDIS world need practical testing and discussion with a wider audience before adoption. The above suggestions should be seen as a starting point and not as the final solution. The final solution will have to wait for the decisions to be made by TSMAD for the purpose of ASL object encoding. C&SMWG will remain in close contact with both CSPCWG and TSMAD for the final arrangement.



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