S-57 Encoding Bulletin (Revised May 2010)

24. UOC Clause 2.1.5.1 Seasonal objects
UOC Clause 2.6.1 Issuing updates in advance

NOTE: The guidance included in this Encoding Bulletin applies only when it is required to indicate seasonality, or to issue update information in advance, and the temporal attributes introduced for some navigational aid equipment objects in S-57 Supplement No. 2 are not available.

Clause 2.1.5.1 of Edition 2.1 (April 2002) of the Use of the Object Catalogue for ENC (S-57 Appendix B.1, Annex A) provides guidance on the use of the attributes PEREND and PERSTA for the encoding of seasonal objects in ENC. Clause 2.6.1 of the Use of the Object Catalogue for ENC provides guidance on the provision of advance update information, including the use of the attributes DATEND and DATSTA.

New tests introduced in Edition 3 (2008) of International Electrotechnical Commission document IEC 61174 - Marine Navigation and Radiocommunication Equipment and Systems – Electronic Chart Display and Information Systems (ECDIS) – Operational Performance Requirements, Methods of Testing and Required Test Results, have resulted in the implementation of the use of these time varying attributes by ECDIS manufacturers in their ECDIS systems.

S-57 Appendix A, Chapter 1 – IHO Object Catalogue (November 2000) contains the list of allowable attributes for S-57 Object Classes. For some navigational aid equipment objects the following time varying attributes are not included in the allowable list:
FOGSIG – PEREND, PERSTA;
RADSTA – PEREND, PERSTA;
RETRFL – DATEND, DATSTA, PEREND, PERSTA;
RTPBCN – PEREND, PERSTA;
TOPMAR – DATEND, DATSTA, PEREND, PERSTA.

Encoders are therefore advised that where a seasonal or periodic navigation aid contains at least one of the equipment objects FOGSIG, RADSTA, RETRFL, RTPBCN or TOPMAR, the time varying attributes PEREND and PERSTA should not be populated for any object comprising the navigation aid. To indicate seasonality for such navigation aids to the mariner, the attributes STATUS = *5* (periodic/intermittent) and INFORM containing details of the period should be populated.

Where a navigation aid contains one of the equipment objects RETRFL or TOPMAR, advance update information should not be issued. Therefore the attributes DATSTA or DATEND should not be populated for any object comprising the navigation aid. An update applying the temporal change to the navigation aid should be issued as close as possible to the date of the change.

Alternatively, if time varying attributes DATSTA and/or DATEND have been populated for components of a navigation aid that contains at least one of the equipment objects RETRFL or TOPMAR, a separate update applying the temporal change to these equipment objects should be issued as close as possible to the date of the change.

FAQ (Revised May 2010)

Q 24 ***Is the population of time varying attributes implemented by the ECDIS?***

A 24 Yes, but encoders should note that not all S-57 objects include the time varying attributes in their attribute list. For encoding navigation aids containing certain equipment objects for ENCs compiled on production systems not current to S-57 Supplement No. 2 (June 2009), see ENC Encoding Bulletin Number 24.

25. UOC Clause 10.2.1 Traffic separation schemes

Clause 10.2.1 of Edition 2.1 (April 2002) of the Use of the Object Catalogue for ENC (S-57 Appendix B.1, Annex A) provides guidance for the encoding of traffic separation schemes (TSS) and each component within a TSS. It is important that mariners be provided with advance notification of changes to TSS, which may include modification to an existing TSS, addition of a new TSS or removal of a TSS. UOC Clause 2.6.1 provides guidance on issuing ENC updates in advance, including the use of the attributes DATEND and DATSTA for objects within an ER data set to indicate when changes to a routeing measure come into force.

Encoders are advised that, in order to provide a consistent approach to mariners regarding advance notification of changes to a traffic separation scheme, the following procedure should be adopted:

1) At least one month before the changes to the TSS come into force, issue an updated data set (as an update or a new edition) which:
- **Adds new or amended TSS component objects (except possibly some navigation aids – see Note below). These objects must have DATSTA populated with the date that the changes to the TSS come into force.**
- **Adds DATEND (populated with the date of the day before the changes to the TSS come into force) to any component objects of the existing TSS that are to be changed or deleted (except possibly some navigation aids – see Note below).**
- **Creates a CTNARE area object covering the geographic extent of both the current and the future TSS. The attribute INFORM or TXTDSC must be used to explain the change to the TSS, e.g. "*The traffic separation scheme off Cape Bon is to be modified at 0000 UTC on 1 July 2009. This ENC includes all the information before and after the change, indicated by the attributes DATEND (before the change) and DATSTA (after the change) on the components of the scheme*". The attribute DATEND for the CTNARE should be populated with the date at which the change comes into force or, if encoders wish to provide extended information to the mariner that a change has been made, with a date up to a month after the change comes into force. If the current and the future TSS are not in the same geographic area, it may be required to encode two distinct CNTARE area objects. A picture file may be referenced by a M_NPUB object sharing the same geometry as the CTNARE using the attribute PICREP if it is considered useful, e.g. the equivalent paper chart representation of the amended or new TSS.**

Note: For ENCs that are current to S-57 Supplement No. 1, the attributes DATEND and DATSTA are not allowed for navigation aid equipment objects RETRFL and TOPMAR. For any changes to TSS that effect these objects, a separate updated data set (as an update) including changes to those navigation aids which contain any of these equipment objects should be issued as close as possible to the date that the modified/new/deleted TSS comes into force. See also ENC Encoding Bulletin Number 24.

2) As soon as possible after the modified/new/deleted TSS comes into force, issue an updated data set (as an update or new edition) which:
- **Deletes the changed or redundant component objects of the former TSS.**
- **Removes the attribute DATSTA from the component objects of the new TSS.**

3) The CTNARE (and M_NPUB if encoded) must also be removed by update, either as part of the update to remove the redundant component objects of the former TSS, or as a separate update at a later date, corresponding to the date populated in the attribute DATEND for the CTNARE.

Encoders who are members of RENCs should also provide advance notification of changes to TSS to their RENC in accordance with RENC procedures, in order for the RENC to provide additional notification to mariners of impending TSS changes.

29. ENC PS Clause 3.3 Objects permitted for use in ENC and their geometric primitives

Clause 3.3, Table 3.1 of Edition 2.0 (November 2000) of the ENC Product Specification (S-57 Appendix B.1) lists those object classes allowed in an ENC and the geometric primitives allowed for each of them.

Edition 3.4 (January 2008) of the IHO Presentation Library (S-52 Appendix 2, Edition 4.3 – IHO Colour and Symbol Specifications for ECDIS, Annex A) contains Look-Up Tables that map S-57 object classes and associated geometric primitives to S-52 symbols for display in ECDIS.

It has been identified that there are some ENC feature object classes and associated geometric primitives that do not have entries in the S-52 Look-Up Tables, and therefore will not display on an ECDIS. At the joint IHO Transfer Standards Maintenance and Applications Development (TSMAD) Working Group and Colours and Symbols Maintenance Working Group (CSMWG) meeting in 2008, those object classes that do not display in ECDIS were discussed and it was agreed that there was no requirement to symbolise some of these due to there being no relevance to safety of navigation in an ECDIS, and/or encoding of these objects using the particular geometric primitive is illogical for ENC.

Encoders are advised that the following ENC object classes and associated geometric primitives will not display in ECDIS:

DAMCON (of type Point);
GRIDRN (of type Point);
PIPSOL (of type Point);
RAPIDS (of type Point);
ROADWY (of type Point);
RUNWAY (of type Point);
TUNNEL (of type Point);
VEGATN (of type Point) – Attribute CATVEG = 1, 10, 11, 12;
WATFAL (of type Point);
SLOGRD (of type Area) – Attributes CATSLO = 1, 2, 3, 4, 5, 7; CONRAD ≠ 1; and
VEGATN (of type Area) – Attribute CATVEG = 1, 10, 11, 12.

Encoders wishing to display these objects in ECDIS must consider alternative encoding options (e.g. using LNDMRK, OBSTRN, SLCONS).

33. ENC PS Clause 3.1 Feature Object Identifiers

Clause 3.1 of Edition 2.0 (November 2000) of the ENC Product Specification (S-57 Appendix B.1) provides guidance on the indication of unique world-wide identifiers for ENC feature objects through the population of the Feature Object Identifier (FOID) field. Incorporated in this guidance is advice that the FOID may be used to identify multiple instances of the same object, with examples listed of the same object appearing in different usage bands, or an object being split by the ENC cell structure.

The emergence of the use of GIS database technology as source for ENC compilation has raised the question as to whether a FOID can be repeated in a single ENC cell due to the separation of parts of a real-world object as a result of the ENC cell structure. This may apply to some line and area objects, but not to point objects; e.g. a depth contour, and its associated depth areas, may be split at the boundary of a cell but "re-enters" the cell elsewhere along the boundary of the cell. In such cases, it has been determined that as the multiple instances of the feature in the cell constitute a single real-world feature object, the FOID can be repeated.

Encoders are therefore advised that where a real-world feature has multiple parts within a single ENC cell due to the ENC cell structure, the FOID may be repeated for each part of the feature object in the cell. Where this occurs, all parts of the feature object in the cell must be identical; i.e. same object class and attribute values, and they must not be component of a collection object or a master/slave relationship.

FAQ

Q 34 ***Can a Feature Object Identifier (FOID) be repeated in a single ENC cell.***

A 34 Yes, but only where the FOID references multiple parts of a single real-world feature. See ENC Encoding Bulletin Number 33.

34. UOC Clause 12.1.2 Relationships

Clause 12.1.2 of Edition 2.1 (April 2002) of the Use of the Object Catalogue for ENC (S-57 Appendix B.1, Annex A) provides guidance for the encoding of relationships between navigational aid structure and equipment objects through the establishment of master/slave relationships. The creation of these relationships is mandatory for ENCs to relate the differing objects comprising a navigational aid. Clause 12.1.1 of the Use of the Object Catalogue for ENC contains a list of the most common navigational aid structure (master) objects, as well as a complete list of navigational aid equipment (slave) objects. Figure 20 in clause 12.1.1 provides a graphical example of how a single navigational aid structure object is related to multiple equipment objects (**LIGHTS**, **FOGSIG**, **TOPMAR**), which may then be further related to the objects being marked using the collection object **C_ASSO**. While it is clear from Figure 20 that a navigational aid structure (master) object may have more than one equipment (slave) object, it is not stated whether a navigational aid equipment object can be related to more than one structure object through the master/slave relationship. Although it is not stated implicitly in the Use of the Object Catalogue for ENC, it is inferred through Figure 20 in clause 12.1.1 that a navigational aid has only one structure (master) object.

Encoders are advised, therefore, that an encoded navigational aid must have only one structure (master) object included in the master/slave relationship.

Example 1: Where an encoded navigational aid consists of both a beacon and a daymark, the beacon must be encoded as the master object and the daymark as the slave object (note that in the lists of structure and equipment objects in clause 12.1.1, DAYMAR can be a structure or equipment object).

Example 2: Where the nature of the base structure of an encoded navigational aid is unknown and it is decided to encode a LIGHTS object as the master object in the relationship, only one LIGHTS object must be identified, even if there are different lights serving multiple purposes at the same geographic position.

FAQ

Q 35 ***Can a navigational mark equipment object be associated with more than one master object through the master/slave relationship?***

A 35 No. See ENC Encoding Bulletin number 34.

FAQ (May 2010)

Q 36 ***Can mangrove areas be encoded for ENC in accordance with the changed paper chart specifications for the depiction of mangroves (Regulations of the IHO for International (INT) Charts and Chart Specifications of the IHO (S-4) – clause 312.4; as amended at Edition 3.006 (April 2009))?***

A 36 No. mangrove areas must continue to be encoded in accordance with clause 4.7.11 of Edition 2.1 (April 2002) of the Use of the Object Catalogue for ENC (S-57 Appendix B.1, Annex A).