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NEWOBJ problems

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Introduction

During the previous TSMAD it was discussed that NEWOBJ would possibly be used to handle some of the current issues with data that does not fit well into S-57. It was decided that this discussion would take place at the next TSMAD, and for this discussion Jeppesen would like to remind TSMAD of some of the limitations of NEWOBJ before proceeding to use this feature class.

Structure of SYMINS

According to the S-52 in Part I chapter 7 (DESCRIPTION OF THE SYMBOLOGY INSTRUCTIONS); symbol instructions are defined in strict Backus-Naur form and accordingly syntax of symbol instructions populated in the SYMINS attribute should conform to Backus-Naur‘s definition of the instructions SHOWTEXT (TX and TE), SHOWPOINT (SY), SHOWLINE (LS and CL) and SHOWAREA (AC and AP). Compliance with this strict syntax is a mandatory requirement, otherwise the instruction cannot be parsered and in this case magenta “?” (S-64 - plot 6, page 7) or default presentation of NEWOBJ should be used.

- **Symbol instructions must be absolutely correct, else unknown symbol will show**
  - **Updates to production systems should be made to make NEWOBJ features reliably**
  - **Updates to S-58 and testing tool to ensure data is 100% correct**

Other factors influensing ECDIS display

The SYMINS attribute defines symbology instruction for one instance of NEWOBJ. All other information about the instance of the realworld object is contains in other attributes, e.g.: CLSDEF, CLSNAM, OBJNAM, INFORM and so on. However this is not enough for complete and correct presentation of the feature instance. For correct presentation a system must also know display priority of the feature instance in relatively other objects, IMO display category (some time this depend on attribute values), over/under Radar flag and viewing group. All these fields in addition to symbology instructions are defined in Look-up entry of S-52 for the feature. Entries for NEWOBJ in IHO Presentation library 3.4 are defined as:
"NEWOBJ","","SY(NEWOBJ01)","6","S","STANDARD","21020"
"NEWOBJ","SYMINS","CS(SYMINS01)","6","S","STANDARD","21020"
This means that all instances of NEWOBJ independently from any symbol instructions will be presented at STANDARD IMO display category with display priority 6. NEWOBJ will be suppressed (under) by Radar Image and all of them will belong to 21020 viewing group (Generic Object). Symbol instructions in SYMINS attribute define only relative priority of presented symbols, i.e. TEXT should be drawn over SYMBOL, SYMBOL over LINE and LINE over AREA.

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- **Symbol instructions only deal with the display of the individual feature in almost isolation**
  - **Standard IMO display category is set for all NEWOBJ**
  - **Viewing group is set to 21020 for all NEWOBJ**
  - **Over/under radar flag is fixed to suppressed (under radar at all times)**
  - **Display priority is 6 always so if two NEWOBJ share coordinates, it might be random which one will display as only the feature drawn last will display.**

Masking

The IHO S-52 Presentation library includes the requirements for suppressing the presentation of edges of objects with lower priority to avoid a cluttered display (e.g. RESARE presentation on COALNE edge). This suppressing can be done automatically when MASK subfield of the FSPT field is set to {1} during digitizing. But in many cases it is not practical due to number of edges that need to be masked and in these cases masking should be done dynamically.
According PL i*n this case display priority (that is absent in symbol instruction) should be used to ensure that objects that overlap each other are drawn in the right sequence. Thus, an object with a higher priority should be drawn after (on top of) an object with a lower display priority. However, if two line objects, or two area boundaries, or a line and an area boundary, are located at the same position and share the same extent (their coordinates are identical), then the line symbolization with the higher display priority must suppress the line symbolization of the other object (line or area). Therefore only the line symbolization of the object (line or area) of the higher display priority is drawn*.
Obviously that it is not possible to do in case of several NEWOBJ or in case sharing NEWOBJ with objects from FC – all NEWOBJ will have display priority equal to 6.

- **Masking of edges cannot be done using symbol instructions, and should such a function be needed this must be done using lines with symbology where needed and no lines where masking is needed along with another NEWOBJ to fill any area function.**

Updating the presentation library

Currently the version of Look-up table (edition number of Presentation Library) and version of Symbol description (S-52 Appendix 2 ADDENDUM TO ANNEX A, PART I, USERS´ MANUAL) completely defines the presentation of an instance of a feature. Where the presentation is not satisfactory, it can be changed by releasing corrections to above mentioned documents. However, for NEWOBJ, symbol instructions are encoded in a feature attribute (SYMINS). Thus to change NEWOBJ presentation it may be necessary to immediately modify dataset, but not only presentation itself should there be changes made to the presentation library.

- **Currently if presentation of a symbol is poor or lacking, this can be corrected by issuing a new presentation library. If this happens to NEWOBJ it may be necessary to update both presentation library and the data where these features exist.**

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Alarms in ECDIS

The definition of NEWOBJ is: *"A new feature specified by the IMO and that affects safety of navigation which cannot adequately be encoded by any existing object class for use in an S-57 data set."* Features that affect safety of navigation often triggers alarms or warnings in an ECDIS (see 11.4.4 of MSC.232(82)). However, it is doubtful that NEWOBJ with symbol instruction in SYMINS attribute would generation of alarm or warning.

- **Alarms/warnings may not be triggered by NEWOBJ.**