**Paper for Consideration by ENCWG4**

# DAYMAR and the double encoding of Base display objects

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| ***Submitted by:*** | Australia (AHO) |
| ***Executive Summary:*** | DAYMAR objects are part of ECDIS Standard display and consequently they should not require the double encoding of a Base display object (e.g. PILPNT) in the same location. |
| ***Related Documents:*** | S-58 Ed 6.1.0, S-57 UOC Ed 4.1.0 |
| ***Related Projects:*** | S101PT |

## Introduction / Background

S-58 check 54b, requires that any DAYMAR not a slave in a master/slave relationship shares location with one of the listed objects.

In many real world scenarios, a DAYMAR sits in the water and it supports a light. Logical encoding practices would allocate the DAYMAR a 'Master' status and the light a 'Slave' status.

## Analysis/Discussion

If this practice is followed, S-58 Check 54b will report a Critical error because the DAYMAR is not a 'Slave' and does not share location with, for example, a PILPNT.

The AHO thinks that because DAYMARs belong to ECDIS 'Standard display' like Beacons and Buoys there shouldn't be a requirement to double encode a 'Base display' object (e.g. PILPNT) in the same location.

Beacons, if unnoticed by mariners, are as dangerous to navigation as DAYMARs. This raises the question regarding why DAYMARs require a PILPNT double encoded whereas BCN**'s do not?

According to S-52 PL 4.0.2 section 10.5.9, DAYMARs in ECDIS should provide the same indication to mariners, at the route planning and monitoring stages, as beacons and buoys do.

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| 54b | For each DAYMAR feature object which is not a slave in a master/slave relationship AND is not COVERED_BY a BRIDGE, COALNE, DAMCON, FLODOC, LNDARE, OFSPLF, PILPNT, PONTON, PYLONS, SLCONS or UWTROC feature object. | DAYMAR not covered by a suitable supporting object. | Amend object to ensure it is situated on a suitable object. | Logical consistency | C |

S-58 check 1775, also generates a Critical Error for DAYMAR (being listed in UOC 12.1.1 as 'navigational aid equipment') when either it sits in the water and does not share its location with a 'navigational aid structure' (as listed in UOC 12.2.1) or one of the objects listed in the check.

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| 1775 | For each navigational aid equipment feature object which is COVERED_BY a DEPARE, DRGARE or UNSARE AND does not have a navigational aid structure feature object as a master AND the geometry of which is not COVERED_BY a CBLOHD, COALNE, CONVYR, DAMCON, (with CATDAM Equal to 3 (flood barrage)), LNDARE, PIPOHD or SLCONS feature object. | Equipment object within DEPARE, DRGARE or UNSARE without an appropriate supporting structure object or underlying object. | Ensure equipment object is encoded with an appropriate structure object or underlying object. | 12.1.2 and 12.8.8 | C |

**Conclusions**

DAYMAR is part of ECDIS Standard display and it shouldn't be treated differently than Beacons.

A DAYMAR object in the water with no overlapping Base display object shouldn't be considered as '… data which is unsafe for navigation' as defined in S-58 section 1.2 under 'Critical Error'.

**Recommendations**

- Update S-57 Appendix B.1, Annex A UOC and S-58 check to 1775 to exclude DAYMAR objects.
- Downgrade S-58 check 54b from 'Critical Error' to 'Warning' and amend the wording of the check's message and solution as required.

**Justification and Impacts**

The intention of the IHO is that Critical Errors will become mandatory once software conforming to S-58 6.1.0 is available and in use by ENC producers. The implementation date of mandatory checks for ENC producers will be announced by IHO Circular Letter.

The current modelling of DAYMARs in S-58 and in particular the requirement to double encode a 'Base display' object in the same location (despite DAYMAR being part of the Standard display) is inaccurate and prohibits HOs from encoding data in accordance with some real world scenarios.

**Action Required of ENCWG**

The ENCWG is invited to discuss the topic and allocate resources to update S-57 UOC and S-58 as required.