

Paper for Consideration by ENCWG

Encoding of DRVAL1 and DRVAL2 for isolated shallow and deep areas

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Executive Summary:	This paper proposes to amend encoding guidelines for DRVAL1 and DRVAL2 for isolated shallow and deep areas.
Related Documents:	S-57 ENC Use of the Object Catalogue for ENC, S-58 ENC Validation Checks
Related Projects:	

Introduction / Background

The current guidance of the UOC, § 5.4.3 [1], states that the DRVAL1 of an isolated shoal should take its value from the next shallower dataset depth contour. Similarly, the UOC guidance is that the DRVAL2 of an isolated deep should take its value from the next deeper dataset depth contour.

It is not uncommon practice, however, for data producers to encode the DRVAL1 of an isolated shoal with the shallowest measured depth contained within the area. Similarly, the DRVAL2 of an isolated deep is sometimes encoded with the deepest measured depth contained within the area. Such encodings provide a more accurate depiction of the dataset bathymetry, however, they cause validation software to trigger warnings related to S-58 check 44 [2].

The recommendation of this paper is to amend UOC § 5.4.3 to allow for the encodings of DRVAL1 and DRVAL2 for isolated shallow and deep areas as described in the paragraph above. If the recommendations of this paper are accepted by ENCWG, then S-58 checks 44, 1768 and 1779 will also need to be amended accordingly.

Analysis/Discussion

Definitions

- *isolated shallow area* – a depth area bounded by only one depth contour, whose depth is shallower than that of the surrounding depth area. **Note:** This includes, but is not limited to, shoals.
- *isolated deep area* – a depth area bounded by only one depth contour, whose depth is deeper than that of the surrounding depth area.

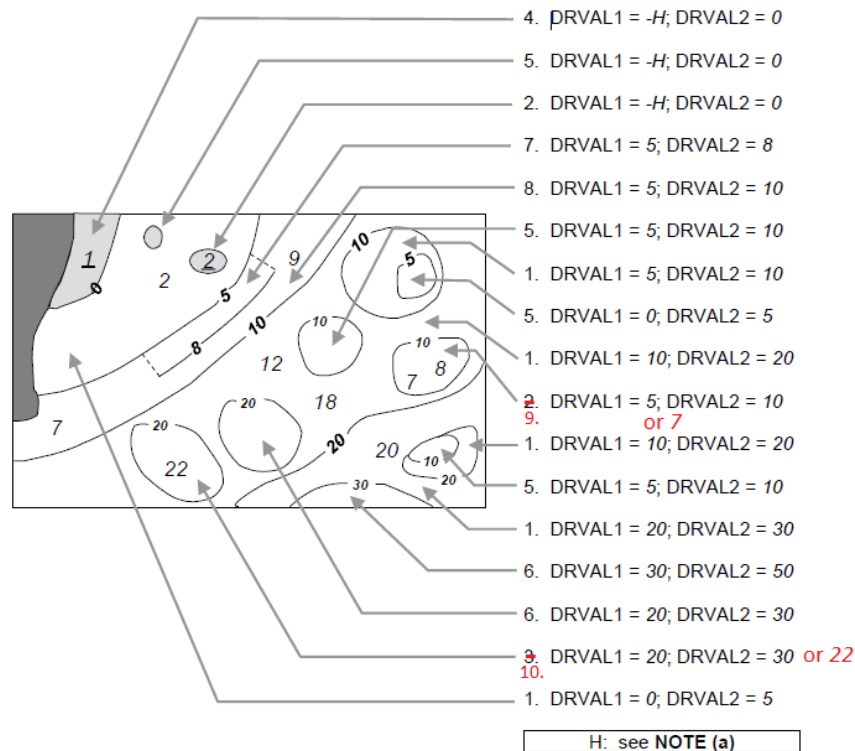
Based on the above definitions, the recommendations of this paper apply only to isolated shallow areas and isolated deep areas. The recommendations of this paper do not invalidate how DRVAL1 and DRVAL2 have been encoded for isolated shallow and deep areas in the past and as such will not require data producers to modify their data. The recommendations simply provide the data producer with the option to encode DRVAL1 and DRVAL2 based on the shallowest and deepest points contained within these areas.

The changes proposed to the UOC § 5.4.3 are as follows.

- Amend the first paragraph of clause 5.4.3 as follows (additional text in red):

For each depth area of type area, DRVAL1 and DRVAL2 should be encoded with the values corresponding to the shallowest and deepest depths in that area. These values, except for the shallowest and deepest areas, should be chosen from the values of the depth contours encoded in the data set, **however the values for isolated shallow or deep areas may be taken from the shallowest or deepest measured depth (see items 9 and 10 in Figure 6 below).**

- Update UOC Figure 6 as indicated by the red text.



- Add the following to the numbered paragraph list:

9. If the depth area is only bounded by one depth contour and the deepest depth is shown by a depth contour and the shallowest depth is shown by a sounding (an isolated shallow area):
- DRVAL1 should take the value of the data set depth contour immediately shallower than the value of the sounding or -H. However if the shallowest sounding within the area is considered to be the least depth of the shoal, DRVAL1 may be populated with the value of this sounding.
 - DRVAL2 should take the value of the depth contour.
- NOTE: In the case where the shallowest depth in the area is equal to the bounding depth contour, both DRVAL1 and DRVAL2 may be populated with the value of the depth contour.
10. If the depth area is only bounded by one depth contour and the deepest depth is shown by a sounding and the shallowest depth is shown by a depth contour (an isolated deep area):
- DRVAL1 should take the value of the depth contour.
 - DRVAL2 should take the value of the data set depth contour immediately deeper than or equal to the value of the sounding. However if the deepest sounding within the area is considered to be the deepest depth of the deep, DRVAL2 may be populated with the value of this sounding.

Conclusions

The recommendations of this paper do not require data producers to update their data or their encoding guidelines. The proposed amendments to the UOC simply acknowledge reasonable encoding practices that have been employed by data producers for many years. The result will be a reduction in S-58 generated warnings for what are reasonable encodings of depth areas.

Recommendations

1. ENCWG to approve the change to UOC § 5.4.3 as described in the Analysis/Discussion.
2. If this proposal is approved by ENCWG, then S-58 checks 44, 1768 and 1779 are to be updated accordingly.

Justification and Impacts

The impact on data producers and the mariner are minimal. Data producers are not required to change their encoding guidelines. Data producers who already encode isolated shallow and deep areas as described in this paper will receive less warnings from their validation software related to S-58 check 44.

The following S-58 checks will need to be amended. Detailed proposals will be submitted to the S-58 sub-working group.

Check 44	Allow the DRVAL1 of isolated shallow areas to be encoded with the shallowest measured depth of the area.
	Allow the DRVAL2 of isolated deep areas to be encoded with the deepest measured depth of the area.
	Allow for the situation where an ENC has multiple values for –H (not discussed within this paper).
Check 1768	Allow the sounding depth value to be equal to DRVAL1 for isolated shallow areas where the shallowest measured depth is equal to the contour value.
Check 1779	Allow DRVAL1 = DRVAL2 for isolated shallow areas where the shallowest measured depth is equal to the contour value.

Action Required of ENCWG

The ENCWG is invited to endorse the recommendations of this paper.

Acknowledgements

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References

[1] IHO S-57 Appendix B.1, Annex A – Use of the Object Catalogue for ENC, Ed. 4.1.0, International Hydrographic Organization, 2018

[2] IHO ENC Validation Checks, IHO Publication S-58, Ed. 6.1.0, International Hydrographic Organization, 2018