Paper for Consideration by ENCWG

Generation of Depth Contours in HDENC

Submitted by:	CHINA Maritime Safety Administration
Executive Summary:	This paper shares a method of generating depth contours in HDENC.
Related Documents:	S-58 Ed 6.1.0 ,S-65 Annex A_Ed 1.0.0_Clean_Final

Introduction / Background

As indicated in S-65 Annex A, Ed 1.0.0 "For reasons of economy, it is considered that the cartographic quality of contours auto-generated and smoothed by modern production software tools is sufficient for use of HD bathymetry in ECDIS. Cartographic intervention should only be applied when matching the "standard" depth contours to adjoining data and in the depiction of isolated shoals and deeps (see clause 8)."

In the process of making HDENC, we find that there are several unreasonable cases in which the depth contours is generated automatically by software, so the method of generating depth contours in HDENC is studied.

Analysis/Discussion

The 13m depth contour is taken as an example to illustrate our method. The software we use is CARIS BDB and CARIS HPD.

Method of work

1. Import sounding file into BDB software, and automatically generate 13m depth contours and corresponding depth areas.
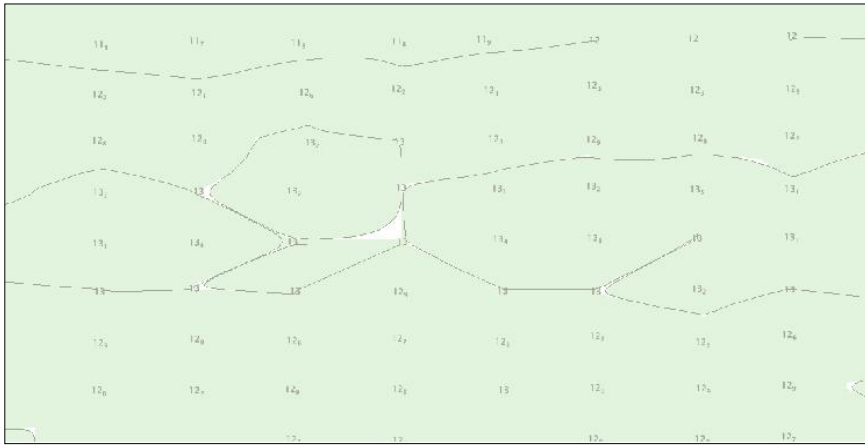
2. Import soundings into HPD.

3. Import 13 m depth contours and depth areas generated in BDB software into HPD.
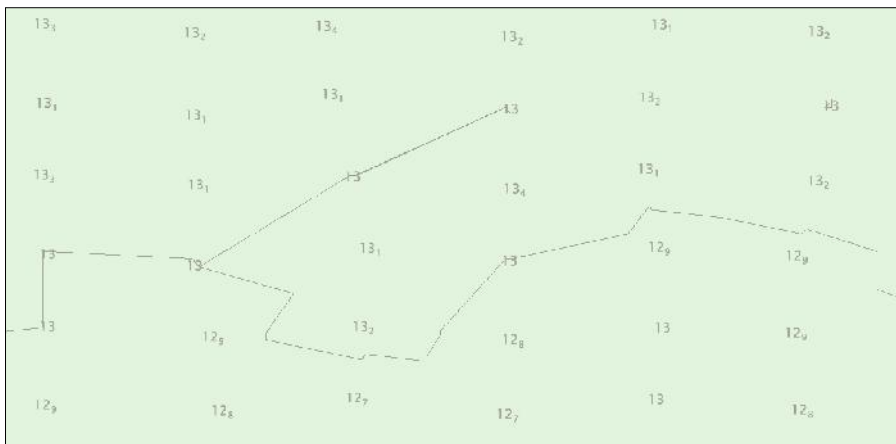
4. Generate an HDENC with 13 m depth contours in HPD.

This method of automatically generating depth contours will cause the following kinds of problems in HDENC and will report errors in S-58 check.

1. Soundings are on depth contour

2. Depth areas of Isolated shoals are too small

3.Depth contours are intersected

In order to solve the above problems, we optimize the depth contours generation method.

- Optimized method of work

1. Select the soundings with a depth value of 13m from sounding file and change the depth value of these soundings to 12.9m.

2. Import the modified sounding file into the BDB software, and automatically generate 13m depth contours and corresponding depth areas.

3. Import the unmodified soundings file into HPD.

4. Import 13 m depth contours and depth areas generated in BDB software into HPD.

5. Generate an HDENC with 13 m depth contours in HPD.

This method effectively avoids the above unreasonable problems, and S-58 validation checks will no longer report an error:
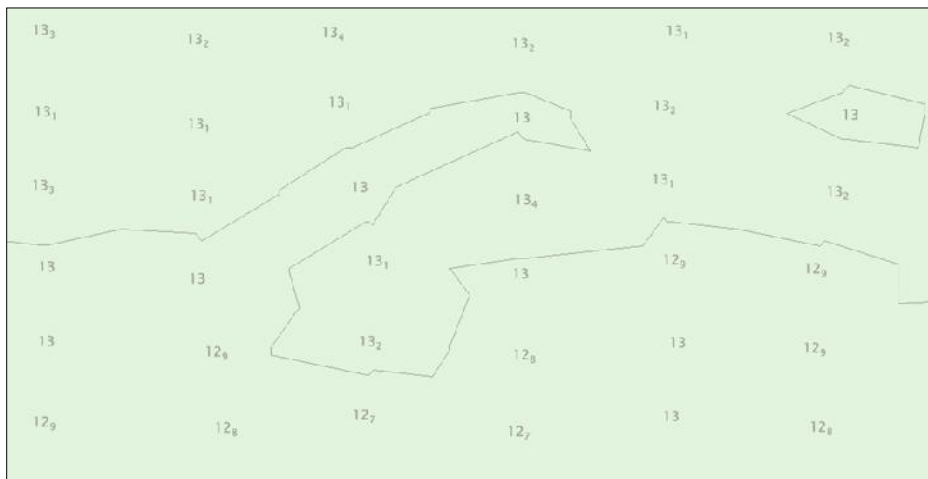
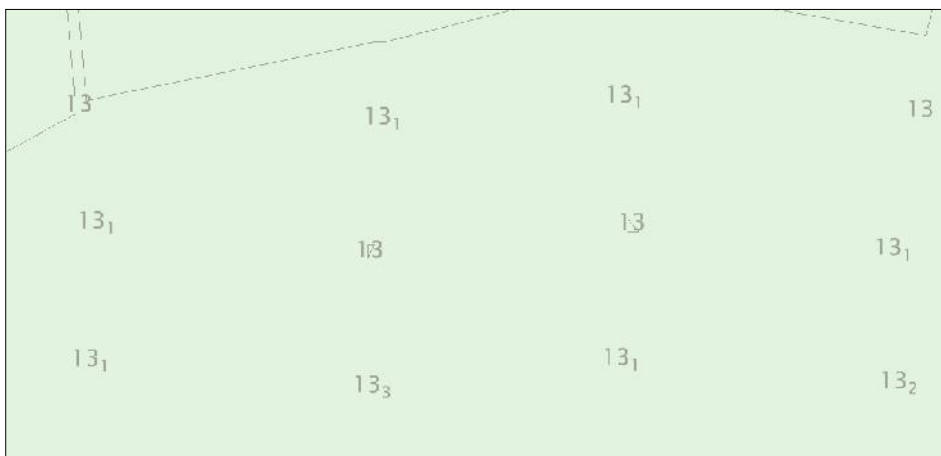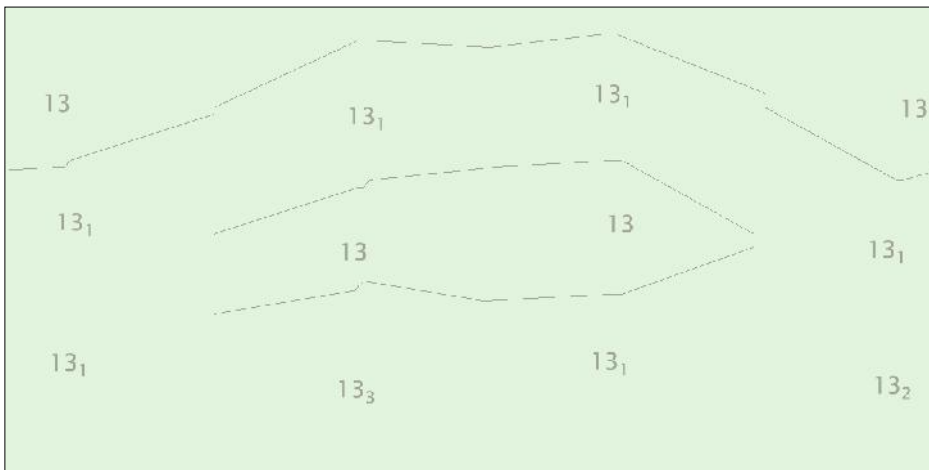1. Soundings are on depth contour

Before optimization
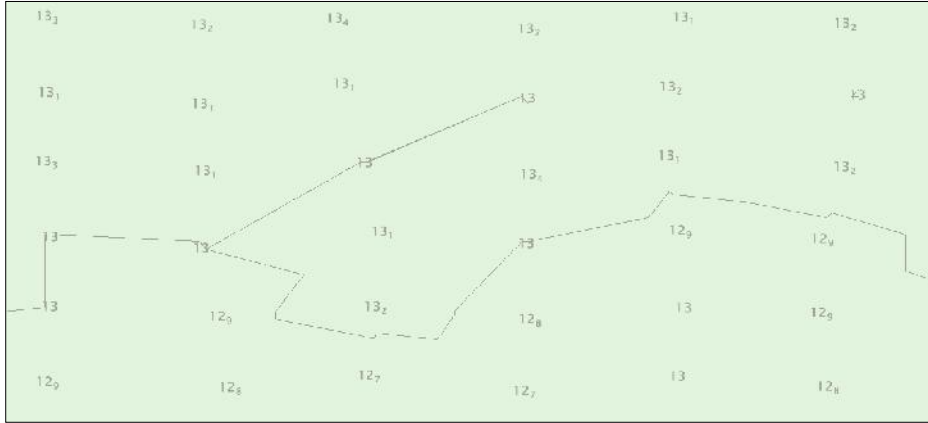
The optimized
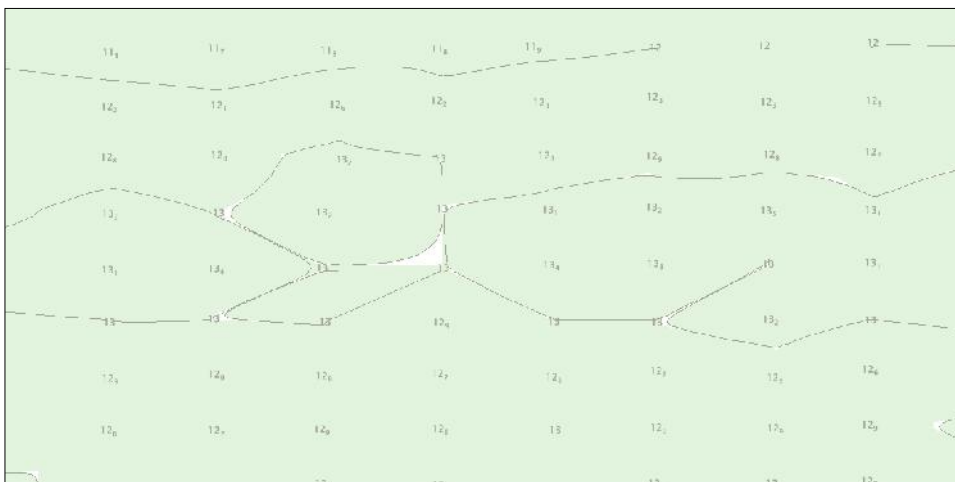
2. Depth areas of Isolated shoals are too small
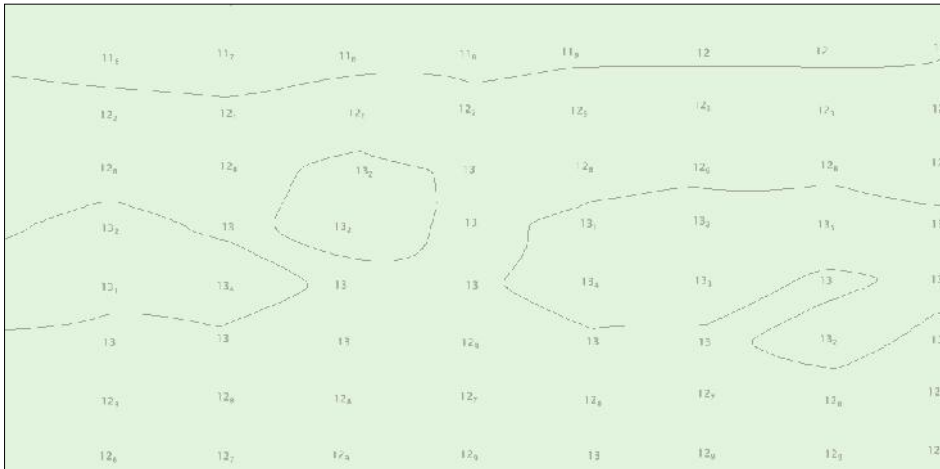
Before optimization

The optimized

3.Depth contours are intersected

Before optimization

The optimized

Conclusions

The essence of the above method is that the shallow depth area is expanded and the deep depth area is reduced when the depth contour is generated in the soundings with a depth value of 13m. This method does not reduce the quality of soundings, because the depth value of soundings is not changed in the final HDENC.

Recommendations

We hope that Hydrographic offices can share their experience of generating depth contour in HDENC.

Justification and Impacts

ENC that meet S-58 validation checks requirements and user requirements can be produced more efficiently by this method.

Action Required of ENCWG

Ask ENCWG to introduce the approach proposed in this article.

Evaluate the methods of generating contours in HDENC of different Hydrographic

offices, and recommend an appropriate method in S-65 Annex A.

References

[1] S-65 Annex A_Ed 1.0.0_Clean_Final   International Hydrographic Organization

2020

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