Paper for Consideration by ENC Working Group

ECDIS Presentation of S-102 High Resolution Bathymetry and S-57 ENCs

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Executive Summary:	High density contours in ENCs
Related Documents:	S-100WG6-08.1D INF, S-57, S-52, S-65 & S-102, UK MAIB and DMAIB ECDIS Study
Related Projects:	S-65 HDENCs

Introduction / Background

The recent report into ECDIS by the UK MAIB and Danish MAIB highlighted the issue that current ENC data derived from paper charts do not support effective safe use of ECDIS. This is due to a lack of bathymetric content, as a result the safety contours that are drawn by the ECDIS do not represent the vessels UKC. Consequently, Mariners are required to create manual go/no go areas interpolating between spot soundings due to the lack of bathymetric granularity in the data. This can induce unintended safety consequences if not performed correctly and obviates a major safety benefit of using ECDIS and ENCs. Analysis/Discussion

Analysis / Discussion

The proposal paper by 7Cs S-100WG6-08.1DINF which seeks modification to the current IHO standards S-52 and S-64 to allow for the concurrent display of S-57 ENCs and S-102 is not something we believe is in the best interests of the Mariner, and any changes now to IHO standards could have a detrimental impact on the timeline for the introduction of S-100 ECDIS.

We believe that the need for high resolution bathymetry is best served by HOs creating HDENCs, in accordance with the guidance contained in IHO S-65 Annex A - HDENC Production and Maintenance Guidance. The S-65 guidance was published in Jan 2020 during the beginnings of a global pandemic, unfortunately as noted in the 7Cs paper there have not been the number of cells created in a volume required to address the clear user need, this may be because of the strict requirement within the guidance that HDENC must be created using special order surveys. This is a requirement that could be removed from the documentation as it is not something imposed in the S-102 product specification. Most HOs already have the data and productions tools capable of creating and validating the HDENCs and with the advances in automation these cells can be produced and maintained quickly and easily using existing methods.

From a Mainer perspective HDENC meets their need for enhanced bathymetry, eliminating the manual creation of no-go areas and allowing the ECDIS to automatically alarm and draw accurate safety contours based on the vessel UCK.

HDENC Key Benefits.

- No need for ECDIS software upgrades
- Existing HO automated production tools available
- No changes required for validation tools and distribution channels
- Increased safety in depth constrained waterways
- Provides both the Master and Pilot with enhanced data for berth-to-berth planning and monitoring
- Accurate safety contour generated by HOs and selected in ECDIS based on vessels required UKC
- Alarms and indications function in ECDIS as expected

Use of IHO S-102 Bathymetric Surface in 'S-57 ECDIS'

There are many drawbacks to the proposal to modify the exiting standard not least the amount of time required to update and approve the standards through the IHO.

The S-102 product specification is still not mature and ready to be used in a live service as such the specification is still subject to change which will not allow OEMs to type approve equipment.

There are limited validation tests for S-102 data and as such this makes its introduction into ECDIS more complicated.

If the new S-102 data is to use the new IHO S-100 security scheme for the transfer of the data, this will add another development cost to OEMs and will protract the type approval process. Currently HDENCs can use the current distribution methods we have today but this would not be the case for S-102 further hampering the availability of high-resolution bathymetry in ECDIS.

As the proposed changes in IHO standards would not be mandatory to implement by ECDIS OEMs the uptake of this hybrid option could be limited to a small number of ECDIS, as such the user need for high resolution data would not be met across the international fleet.

The cost of upgrading the current generation of ECDIS systems to accept the new hybrid way of working may slow down the development of full S-100 ECDIS and consequently the uptake of other S-1XX services as Shipping Companies will be reluctant to invest in new hardware.

It is also noted that to introduce a change like this now to existing S-57 ECDIS could take OEM resource off S-100 ECDIS development and further slow down the introduction of new systems. As such we are very worried having interim steps like this will slow down the transition to full S-100 systems

Any change to the existing IHO standards would need to be reflected in the edition numbering. This could be very confusing for ECDIS users and PCS inspectors as guidance in IMO circ 1503 mandates all systems should be kept up to date with the latest IHO standards and yet optional annexes would require full new editions of both S-52 and S-64 as they are substantive changes.

Recommendations

It is the considered opinion of the UKHO that the ENCWG reject the proposals to develop the existing IHO standards S-52 and S-64 to allow the integrated display of S-102 with S-57 ENCs in ECDIS. It is strongly recommended that to provide the safe navigational data which can be used in all ECDIS today HOs revisit their policies to create HDENCs. UKHO recommends that the ENCWG report to HSSC on developments with HDENC automation and the benefits this will achieve. As the development of HDENC is of navigational significance it is also recommended that HSSC add this as a strategic goal and a concerted effort should be given to increase the number of HDENCs commercially available for Mariners.

Conclusion

There is a clear need for HOs to provide the users of ECDIS with ENC data that more accurately defines the safe and unsafe areas. We believe that this user requirement is best served by HOs creating HDENCs. The advantages of HDENCs are clear, no ECDIS software upgrades to use the data and all safety features work in the ECDIS without modification. All other options regarding hybrid solutions have a great many drawbacks from time to implement to excessive development cost which we believe will all have a detrimental effect on the introduction of S-100 ECDIS.

Action Required of ENC WG

The ENCWG is invited to:

a. Discuss the details within the paper
b. Agree to the recommendations above for HOs to focus on HDENC production
c. Provide HSSC with recommendations for the endorsement of increased HDENC production and establish strategic goals related to HDENC production.