

Paper for Consideration by HSSC9

Some perspectives for Additional Bathymetry Layer standard

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Executive Summary:	This paper is provided to support the use of Additional Bathymetry data to address community centric issues related to safety of navigation purpose.
Related Documents:	<ul style="list-style-type: none"> - HSSC8-05.3C Rev1 (Development of an Additional Bathymetry Layer standard based on S-57/S-52); - ENCWG2-6.6A (Presentation of High Resolution Bathymetry in S-57 ENCs) ; - ENCWG2-6.6B (Some perspectives for Additional Bathymetry Layer standard) - S-102 specification.
Related Projects:	B-ENC ; S-102 products usage (Ref paper S-100WG2-10.11); Under Keel Clearance Management Information Product Specification (ref paper HSSC7-05.1D)

Introduction / Background

As reminded by HSSC8-05.3C, we are now facing usages able to use, and even urgently require, very high resolution data for computation as decision aids for the mariners, the pilots, and the port managers. As quoted in HSSC8-05.3C “ Specific navigational tasks like pilotage and vessel traffic services at seaward harbor approaches and port areas request the provision of more detailed seabed topography based on the most recent survey available. Such specific bathymetric layer should ideally allow the combination with regular ENCs and facilitate the application of tidal information to depth soundings and dense contour lines to aid precision navigation for pilots.”

Additionally, other usages in deeper water (fishery activities, sea bottom research, AUV navigation ...) request the provision of more detailed seabed topography based on the most recent survey available as well.

Indeed, all these usages request provision of bathymetric data in complement of the ENC in a suitable form. Even though ENC data is compiled for a variety of navigational purposes, it cannot cover all the needs at the same time.

It makes sense today to start addressing this new request. Anyway, we still have to think about another legacy system, the mariner, who may need to “read” the sea bottom through the chart and for whom the “traditional” chart paradigm still appears effective to make him easy read the bathymetry.

Analysis/Discussion

It is true that current S-57 standard allows the encoding of high density bathymetry (i.e. densified depths areas). However, there are some important constraints that make impossible a global production of such products everywhere needed, such as: the limit to 5 megabytes for an ENC Dataset, the “urgent” need for recent bathymetric data which is hardly compatible with standard ENC production schema and, eventually, possible liability issues for HOs due to the encoding of densified depth contours (every 0.1 m) as compared to the associated CATZOC value.

As highlighted in ENCWG2-6.6B, based on Inland navigation feedbacks, B-ENC appears as effective and likely quite straight forward to specify. One major point about the specification may be to agree on the terms. ENC means a “S-57 ENC PS compliant product which is assumed by an official HO”. Using “B-ENC” term in a different meaning is confusing for the ENC baseline. In addition, HSSC8-05.3C Rev1 presents the B-ENC as the results of the fusion of ENC data with the additional bathymetry layer (ABL), implying that B-ENC is a user system process output and not a certified product (ABL may be).

It seems important to clarify this terminology issue.

Then, such an IHO endorsed product specification for additional bathymetry would match community requests like pilotage and vessel traffic services. IHO would play a key role as standardization authority in the maritime domain and it would cast a concrete bridge between the maritime and inland navigation domains where the seaward harbour approaches and port areas are settled around. It seems to be a quick win effort.

Moreover, B-ENC would be an opportunity to expand the concept in the maritime domain for other communities (e.g. fishery, AUV navigation) but it does not seem so different to the use of S-102 products, which are certified specifically for safety of navigation purposes.

The concept of Additional Bathymetric Layer is already effective and has proved that it works within the S-57 framework. Once a “universal” standard adopted for “S-57” ABL, it will be easily adjustable to also support S-100 products.

Conclusions

The term “B-ENC” should be clarified in regards of “ENC”, and then B-ENC PS elaborated by the IHO with expert contributors (ENCWG responsibility) appears as a quick win. The use of B-ENC will then get close to the use of S-102 product, both being one of a number of additional layers that could be used in a safety of navigation prospective.

Recommendations

- Follow up the principles supported by HSSC8-05.3C Rev1, with a PT endorsed by ENCWG and/or S-100WG.
- Consider the interest of B-ENC specification in e-navigation prospective, to vet how to use additional bathymetry data for safety navigation purposes as for S-102 products.

Justification and Impacts

The provision of a standard for detailed bathymetric information to complement the information of sea bed bathymetry embedded in ENCs is a core issue of IHO as an international standardization body, and as a major actor of the development of e-navigation services.

Action Required of HSSC

The HSSC is invited to:

- a. note this paper;
- b. agree with HSSC8-05.3C Rev1 recommendations and course of actions;
- c. require ENCWG and/or S-100WG to set up a B-ENC project team, possibly with S-101 / S-102 considerations.