

Bathymetric ENC: Production Process and Product Specification

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ABSTRACT

ECDIS is evolving from display of static, chart-related information to a decision-support system capable of providing predicted, forecast and real-time information. However, to do so ENC data must be expanded to include both “Z and time” dimensions. Currently, most ENC data is produced by digitizing paper nautical charts. As such, there are limits in regard to relatively few depth contours/areas being available. However, if high-density hydrographic surveys (e.g., multibeam echo-sounder) are used as source data, a “Bathymetric ENC” can be produced containing multiple contours or depth areas at 10cm intervals.

This paper discusses the process required to produce a “Bathymetric ENC.” In particular, three phases are involved: 1) compilation and inclusion of high-density depth information into existing IHO S-57 ENC data; 2) development of a “Bathymetric” ENC Product Specification” capable of being used as a supplemental ENC data in existing ECDIS equipment; 3) integration of predicted, forecast, and real-time tidal/water level information. With a “Bathymetric ENC”, a water level value can be applied to depth areas (or contours) such that safe/unsafe water can be displayed dynamically. The ENC data is not changed, only the display of safe/unsafe water depending on under-keel clearance of the vessel (a parameter set by ECDIS user), and changes in tide/water levels (predicted or real-time values). In practice, a “Bathymetric ENC” integrated with tidal information can become a “Tide-Aware ENC”. It can also be used to display dynamic water level changes for river/inland waterway navigation.

Also discussed will be recommendation on how a “Bathymetric ENC” Product Specification can be incorporated into the future IHO Standard for Digital Geographic Data (S-100).