Paper for Consideration by HSSC-16

Automated Paper Charts from ENCs

Submitted by:	Canada
Executive Summary:	Update and way forward for Automated Paper Charts from ENCs in Canada
Related Documents:	Considering subscription service versus Notice to Mariners HSSC12-05.3D
Related Projects:	National Geospatial-Intelligence Agency symbolic correction symbology

Introduction / Background

With S-100 on the rise, there are numerous parallel products a typical Hydrographic Office (HO) needs to create and maintain, such as Paper charts (vector or raster-based), Raster, ENC, and S-101.

Recently, the Canadian Hydrographic Service (CHS) has reached a significant milestone by officially releasing its first automated paper chart on the east coast of Canada. This achievement was made possible by leveraging technology and existing standards. Further automated paper charts are planned for other regions of Canada over the next few months.

Analysis/Discussion

As we move towards a digital future, data-centric Hydrographic Offices (HOs) need to limit their investments in paper chart products to better support the digital realm, with autonomous navigation being a prime example. A crucial aspect is to establish chart specifications that cater to the requirements of both electronic and paper products. Unified SVG symbols, including catalogs and dictionaries, are a key factor in enabling software providers to efficiently create paper charts from Electronic Navigational Charts (ENCs). For users, these unified SVG symbols ensure accurate portrayal.

The next step for the Canadian Hydrographic Service (CHS) is to process updates using the graphical Notice to Mariners (NTM) method. This would involve leveraging the work done by the National Geospatial-Intelligence Agency (NGA) of the USA over the past few years, which includes overlaying changes on chart objects. By adopting this approach, the process of chart correction from producer to user can be modernized and streamlined.

Conclusions

The automation of paper chart creation from Electronic Navigational Charts (ENC) can significantly alleviate the extensive efforts required by Hydrographic Offices (HOs) to create and update paper charts in compliance with International Hydrographic Organization (IHO) specifications. This process can free up resources, allowing them to be redirected towards the ENC production and S-100. A single production line with multiple outputs ensures the coherence of products for users. This approach can significantly reduce the latency of chart updates from the producer to the user. Furthermore, the adoption of a unified IHO symbology will simplify chart interpretation, minimize confusion across products due to varying symbology, and ultimately enhance the safety of navigation.

Recommendations

We encourage HOs to investigate this approach to streamline their operations, we've demonstrated the technical feasibility and we are already leveraging the benefit of this initiative.

Justification and Impacts

Hydrographic Offices (HOs) cannot undergo transformation if resources continue to be allocated to traditional paper chart production and maintenance. Automation derived from Electronic Navigational Charts (ENCs) and the implementation of unified, comprehensible symbology are viable solutions to enhance the efficiency of HOs and simplify the usage of charts for users.

Action Required of HSSC
The HSSC is invited to:

      a.   HSSC to note the Canadian progress on Automated paper charts from ENCs.

      b.   HSSC to continue support NCWG and its Unified symbology project team

      c.   HSSC to put a high priority on the NCWG workplan item related to S-100/S-57/IHOS-4/IHO INT1 relational tables for symbols in SVG format.