



7th Meeting of the IHO Council

Information Paper Regulatory considerations for Hydrographic Organizations

Agenda Item 9.1



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SHIFT TO DIGITAL NAVIGATION BACKGROUND

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- **Digital navigation improves safety of navigation of vessels.**
- International and national navigation regulations have been in place for many years. Generally regulations mandate a “**means to navigate**” and a way to “**plan and display the ships route**”.
- Chart producing agencies should **consider the impacts of SOLAS, individual national regulations**, and/or those established by regional organizations to enable **all vessels to benefit from digital data**.



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SOLAS CHAPTER V, REGULATION 19

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- Section 2.1 defines “Carriage Requirements” as affecting **“all ships, irrespective of size”**.
- Section 2.1.4 defines this as:
 - “to carry nautical charts and publications” (issued under authority of a government)
 - “As ECDIS (using ENC) may be accepted as meeting the chart carriage requirement...”
- This indicates a vessel fitted with an ECDIS may use digital data, but if not fitted, should not.



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SOLAS CHAPTER V

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- SOLAS does not apply to certain classes of vessels, including public vessels
- Regulation 1.4
 - Establishes the option for national administrations to determine “**to what extent the provisions... do not apply**” for other categories of ships
- **National regulations tend to follow this model, but may differ.**



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EXAMPLE OF NATIONAL REGULATION CHALLENGES

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- U.S. regulations recognize the gap between SOLAS and “all vessels” and established updated regulations in 2015 to identify Electronic Chart Systems as a reasonable approach to navigation.
 - Recognizes the usability and advantages in cost and space of electronic navigation over paper navigation
 - Requires, in certain cases, the “display” must be tested against IEC and/or RTCM 10900.7 standards
- U.S. Commercial regulations do not apply to public vessels – these are regulated by the public agency, i.e. Navy, USCG, NOAA, Customs, EPA...
 - We are currently unaware of the number of agency regulations that recognize digital navigation



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RADIO TECHNICAL COMMITTEE MARITIME

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- RTCM 10900.6 establishes:
 - The electronic chart technology provides significant benefits in terms of navigational safety and operational efficiency.
 - There are two basic types of systems that employ electronic charts: systems that comply with the International Maritime Organization (IMO) requirements for ships that are directly governed by the International Convention for the Safety Of Life At Sea (SOLAS):
 - Electronic Chart Display and Information Systems (ECDIS),
 - and all other systems, regarded generically as, Electronic Chart Systems (ECS).



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RTCM 10900.6

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- This Standard specifies the minimum operational, performance and technical requirements,
- methods of testing for RTCM-compliant ECS. RTCM-compliant ECS are designed or adapted for use as back-up arrangements for ECDIS,
- and as an alternative to ECDIS or IEC-compliant ECS aboard ships that are not required to carry ECDIS.



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FOUR LEVELS OF RTCM ECS STANDARDS

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- Class A RTCM ECS are intended to qualify as back-up arrangements for ECDIS and as a primary means of navigation for ships that operate offshore.
- Class B RTCM ECS are also intended to serve as a primary means of navigation for ships that operate offshore. They are not required to have all of the navigational functionality of a Class A ECS.
- Class C RTCM ECS are intended to plot and monitor the position of ships that do not generally operate offshore. They are not required to have all of the functionality of a Class B ECS.
- Class D RTCM ECS are intended to plot the position of ships that do not operate offshore. They are not required to have all of the functionality of a Class C ECS.



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ROYAL INSTITUTE OF NAVIGATION

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- 2022 Report on Suggested Core Standards for electronic charts for leisure vessels – fit for navigation
 - Small vessels, <24m,
 - Echarts meeting minimum standards
 - Display Systems meeting minimum standards
 - Challenges:
 - HO restrictions on use of data – should serve as baseline only and loosen licensing
 - **Requirement for multiple data sources beyond HO data** – These vessels operate outside the area of interest to national authorities



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RIN APPENDIX 2, POTENTIAL DATA SOURCES

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- Official IHO Sources; S-57 Data, NtM etc
- Expert Sources; eng surveys, Harbor Authorities, aerial photos
- Publisher Verified; verified rocks, missing ATON, CSB, etc
- User Sources; own data, drone, visit reports, etc



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- **3.2.12**
- electronic chart information
- A generic term to include all types of electronic nautical charts, electronic publications and other electronic information used for navigation purposes in ECS. Regulatory authorities using this standard further define specific types of electronic chart information, e.g. official Electronic Navigational Charts that are required for an ECS to meet specific regulations.



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