

32nd North Sea Hydrographic Commission Meeting (NSHC)

Dublin, Ireland, 21 to 23 June 2016

Report of the Worldwide ENC Database Working Group (WENDWG)

Submitted by:	Chair, WENDWG
Related Documents:	Final minutes of IRCC-7 and HSSC-7, EIHC-5 Decisions, IHO Strategic Plan Performance Indicators (and Appendix IV to the IHO Annual Reports).
Related Projects:	N/A

Chair:	Jamie McMICHAEL-PHILLIPS, UK
Vice-Chair:	John NYBERG, USA
Secretary:	Yves GUILLAM, IHB
Member States, RHCs and RENCs:	Membership List

Meetings Held During Reporting Period

1. WENDWG6, 8 - 10 March 2016, Stavanger, Norway.
2. Planned: WENDWG7, 21 January – 2 February 2017, Washington DC or Durham, USA.

Programme of Work

3. In 2016, at the 6th meeting of the Working Group, the following key issues were discussed and are summarised in more detail further within this report:

- Overlapping Issues
- RENC Harmonisation and Distribution
- ENC Coverage
- IHO Performance Indicators and the IHO ENC Catalogue
- The Full Implementation of the WEND Principles
- Admiralty Information Overlays
- Review and Update of the WENDWG Work Programme
- Election of a Vice-Chair
- Industry and Stakeholders Session

Overlapping Issues

4. WENDWG has an objective to monitor the application of the WEND Principles by the MS and RHCs. During discussion it was agreed that, in terms of gaps, we have reached the stage where further progress on delivering global ENC coverage is now largely dependent upon new surveys or re-surveys, to modern standards, of those areas where there is no satisfactory ENC coverage.

5. However little progress has been made to resolve the issue of ENCs overlaps and currently RENCs (and VARs) cannot deny the sale of overlapping cells. This is despite studies showing the unpredictable nature of ECDIS in situations where overlapping data is used. Further research work is being led by Singapore in the Malacca Strait area and equipment manufacturers are also on standby to implement a hierarchy of tests if IHO

decide in the future to propose a move to ECDIS selection criteria. Whilst the situation *may* be mitigated by budgetary constraints driving mariners to only buy one ENC at the appropriate scale for their passage, we should not rely on this as a solution to overlaps. WEND Principles need to be applied by MS together with the respective RHCs in defining approved ENC schemes. The WG considered that a pragmatic approach was needed, taking into account all the complementary tools available and to consolidate the results of the IC-ENC overlapping study whilst seeking the views of OEMs, the ENCWG and the NCWG. IMO arbitration was the absolute last option. In the meantime we are seeking the views of CIRM on the issue of dealing with overlaps.

6. Further we are seeking guidance and approval from IRCC, to draft a Proposal at the IHC-19/IHO-A1 for the adoption of an IHO Decision, the objective being a commitment to:

- Identify the most “navigationally-significant” overlapping issues;
- Prevent the increase of such cases;
- Address and solve all of those cases, as soon as possible and at least within 3-years, at the IHO level (using the full range of tools: WEND Guidelines, RHCs, ENC Schemes, RENCs, and OEMs).

RENC Harmonisation and Distribution

7. The current progress in cooperation on harmonization and distribution issues between PRIMAR and IC-ENC is very reassuring and participation of the RENCs in RHCs’ conferences and meetings is key to assisting the integrating of Coastal States within the IHO. Both RENCs have constructed a comprehensive data flow diagram that depicts membership together with data validation and distribution mechanisms. This has been posted on the IHO website. Whilst it is a Coastal State responsibility to decide on its ENC distribution mechanisms, the WG noted that one of the best way to ensure a consistent and high quality level within the IHO is to adopt a distribution through the RENCs. In future an additional layer will be added that depicts ENC producers/data that do not benefit from the full range RENC services. Further discussion included a presentation by Norway on a pilot project for S-102 bathymetric data distribution. Such products are not intended for primary navigation and ECDIS, but should be considered positively in the future as part of e-navigation.

ENC Coverage

8. The UKHO provided a global analysis of the situation in terms of ENC coverage. There was negligible change from the “adequate coverage based in paper charts” figures provided for 2014 thus:

- Small-scale ENCs 100%
- Medium-scale ENCs 90%
- Large-scale ENCs 97%

9. Several regional International Charting Coordination Working Groups (ICCWGs) are now using ENC coverage as part of their systematic risk assessment analysis protocols. The next stage which will bring benefit will be for RHCs to progress studies beyond only cruise ships and include various other categories of SOLAS vessels. Use will now be made of the National Geospatial Agency World Port Index Database (Pub. 150) to determine where large scale ENC coverage is missing and all RHCs are encouraged to implement systematic risk assessment methodologies to assess and refine optimal ENC coverage.

IHO Performance Indicators and the IHO ENC Catalogue

10. The WG agreed to make a proposal to IRCC8 that the evolution of WEND performance indicators should evolve from 7 into 2 as part of the next IHO Strategic Plan and 3-year Programme of Work, namely: *Indicator 1* is to reflect the IHO’s level of commitment in ENC production; and *Indicator 2* is to assess the appreciation by end-users and stakeholders.

11. IHB gave an update on the IHO ENC Catalogue that was launched in March 2015. As part of ongoing activity, the WG will consider the potential to extend the catalogue to display “approved” ENC schemes (cf: S-11 Part B for INT paper charts).

The Full Implementation of the WEND Principles

12. Over the last year, France has led a correspondence group to analyse barriers that prevent the full implementation of the WEND Principles and to list possible consequences. It was noted that several recommendations were reported, some of them existing already in the IHO toolbox (Guidelines, Annex to the WEND Principles), but that have had little or no effect as they are not always fully applied in some cases. The full report can be found as a paper to WENDWG 6 and is posted on the IHO website. Key highlights are as follows:

- a. Some of the Top 2000 ports have inadequate coverage and ENC production may need to be accelerated or reprioritised.
- b. Some countries do not make their ENCs available and some do not distribute ENCs via a RENC. RHCs need to encourage RENC membership and the latter need to ensure their operating models are understandable. In particular UKHO and Jeppesen were encouraged to make their ENC holdings more widely available through a RENC.
- c. ENCs updates should be as frequent as those for paper charts. This is not always the case for some MS due to resource/capability/technical constraints and so capacity building efforts through RENCs or wider IHO resources can assist here.
- d. Errors in conformance with relevant IHO and IMO standards need to be addressed by an initiative to raise awareness of standards within the IHO community.
- e. Overlapping ENC data, which undermines the credibility of the IHO, needs to be addressed at RHC level and where possible by clipping.

Admiralty Information Overlay (AIO)

13. Following debate at HSSC and previous WGs, tasking from IRCC was to examine further, at WENDWG5, the issue of AIO. UKHO was tasked to provide a report on the benefits/risk assessments and a WENDWG drafting group submitted a Recommendation Paper.

14. The UKHO paper recommended that:

- a. WENDWG continues to encourage chart producers to ensure their ENCs and paper charts are consistent for navigationally significant content;
- b. WEND WG acknowledges the comparison work undertaken by UKHO and accepts the value to its customers of being made aware of unresolved navigationally significant differences between ENCs and ADMIRALTY charts;
- c. EPNMs can be avoided by quick resolution of issues; Member States are therefore encouraged to respond when informed of issues;
- d. Until issues of presentation of T&Ps are resolved the use of overlays to highlight where they appear is recognised as a useful safety feature;
- e. Member states should be encouraged to include T&P information in their ENCs and work with service providers to ensure that any overlays produced are accurate and timely in presenting information.

15. The WENDWG drafting group Position Paper was then noted for IRCC8 final consideration and approval:

- (1) For producing nations that provide P/T NMs for their ENCs, the existence of two different services, official ENCs and AIO, must be avoided. This issue has been discussed for a couple of years now without reaching a solution. It is proposed that:

- a. The UKHO withdraws their AIO service for the areas where the primary charting authority produces P/T NMs for their ENC:
- b. That the AIO service will be provided only if and after a given producer nation has provided consent for such a service on waters where it is the primary charting authority. Bilateral agreement should be sought in such circumstances prior to AIO entering into service.

(2) WENDWG recommends that an improved solution for awareness and use of P/T updates in future S-101 based ECDIS be included in ENCWG work plans (HSSC should make sure of that). In the interim period possibilities of S-124 should be considered.

Review and Update of the WENDWG Work Programme

16. A Programme of Work for 2016-17 is enclosed with this report at Annex A and submitted to IRCC8 for endorsement.

Election of a Vice-Chair

17. Following the retirement of Mr Sean Hinds from the Canadian Hydrographic Service in December 2015, after a career of almost 35 years, the post of Vice-Chair fell vacant. Mr Hinds was a very proactive contributor to the WEND initiative and our community has benefitted greatly from his sage guidance, technical assistance and support.

18. Following nominations and elections, the WENDWG was delighted to appoint Mr John Nyberg of USA to the post of Vice-Chair and we look forward to continuing to work alongside him.

Industry and Stakeholders Session

19. In accordance with the WENDG Terms of Reference, and for the first time in the history of the WG, expert contributors were invited to join the 6th Meeting and presented as follows:

- a. "Data aspects of future navigation: What industry is looking for when talking e-Navigation?" by CIRM.
- b. "ENCs and NtMs around Taiwan: Real-world test cases of WEND, the risks and user needs" by the National Taiwan Ocean.
- c. "Grid indexing and referencing S-100/S-101" by Caris.
- d. "PresLib 4.0 – Consequences in shipping" by SevenCs.

20. This Industry and Stakeholders Session proved to be enlightening and generated much discussion. The presentations raised healthy debate; and it is clear that whilst IHO committees and working groups retain the lead on current and future issues, we can draw upon the invaluable services of industry experts to assist in providing technical support in the way we might wish to overcome future challenges.

21. As the 2017 meeting of the WENDWG will be focused on International Hydrographic Conference/Assembly matters and inputs, it is intended to hold the next Industry and Stakeholders Session at the 2018 WG meeting.

Progress on IRCC Action Items

22. All IRCC previous actions have been incorporated into the WENDWG Work Programme and progressed accordingly.

23. The NSHC is invited to:

- a. **Note** that further progress on delivering global ENC coverage is now largely dependent upon new surveys or re-surveys of areas where there is no satisfactory coverage.
- b. **Commend** MS to work together to reduce overlaps by applying the WEND Principles in defining approved ENC schemes.
- c. **Note** that the WENDWG is drafting a Proposal on overlapping issues for the adoption of an IHO Decision.
- d. **Note** the evolution of WEND performance indicators from 7 to 2 as part of the next IHO Strategic Plan and 3-year Programme of Work.
- f. **Note** the recommendations from the UKHO Report and WENDWG Position Paper.
- g. **Note** the recommendations of the WENDWG Position Paper
- h. **Note** the proposed updated WENDWG 2016-17 Work Programme as given in Annex and the continuity of WENDWG activities ([WENDWG ToRs](#) Art. 4.3 refers).

Annex:

A. Proposed WENDWG 2016-17 Work Programme.

WENDWG Work Programme 2016-17 (to be approved at IRCC-8)**Objectives** ([WENDWG TORs](#) refer)

1. Monitor the development of adequate ENC coverage to meet carriage requirements for ECDIS;
2. Develop proposals for speeding up ENC production and ensuring uniform ENC quality and consistency, and for making data available worldwide, including SENC distribution, taking advantage of any offers for production assistance, or other ways of mutual assistance and co-operation;
3. Advise MS, where appropriate, on the need, as well as on methods and tools for validating the data, and on any assistance which could be offered by the RENCs;
4. Monitor the implementation of the WEND, in response to Decision 21 of the XVIIth IHC, and advise IRCC of appropriate measures for speeding-up the implementation process;
5. Assist in harmonizing the policies of regional ENC Coordinating Centres (RENC) with respect to matters related to administration, legality, finances, technical processes, et cetera.

Tasks

A	To assess overlapping ENC data issues within ECDIS and make progress to solve them
B	To finalise paper on Guidelines on Assessing and Eliminating the Risk of Overlapping ENC Cells
C	To progress on RENC Harmonization Issues
D	To continue working to attract ENC producer nations to join the RENCs or distribute their ENCs through a RENC
E	To ensure data quality and consistency
F	To monitor and report ENC coverage report to WENDWG
G	<i>Left blank intentionally</i>
H	To progress the development of the IHO ENC catalogue
I	To develop capacity Building activities
J	To propose way ahead for assessing the long term consequences of not achieving full implementation of the WEND Principles
K	To address the relevance of information overlay services and their status in the global IHO ENC Programme

Work Item	Title	Priority H-High M-Medium L-Low	Next Milestone	Start Date	End Date	Status P-Planned O-Ongoing C-Completed S-superseded	Contact Person(s). Participants	Deliverable	Remarks
A.1	Pilot project using OEM tools to resolve ENC overlapping issues	M	IRCC8 (tbc)	2014	2016	O	Singapore/EAH C	Recommendations and potential impact on WEND Principles	See HSSC6-05.6B Action WENDWG6/07 Report expected from EAHC/SG
A.2	Develop scenarios and test cases on ECDIS with overlapping ENCs	M	WENDWG6	--	2016	C	IC-ENC	idem	Action WENDWG5/04. Complete
A.3	Assess the impact of overlapping ENC on ECDIS	H	WENDWG7	2016	2017	O	IC-ENC, CIRM	Recommendations and Resolution at IHO-A1 (tbc)	Questionnaire to CIRM for full assessment Actions WENDWG6/03, 04, 05.
B.1	Finalise paper on Guidelines on Assessing and Eliminating the Risk of Overlapping ENC Cells	M	WENDWG5	2013	IRCC-7	C	WENDWG		First step (procedure for RENC): see IRCC6-08C Action WENDWG5/09 Complete
B.2	Develop policy on overlapping data and production responsibilities	M	IRCC8, HSSC8	2014	2017	O	RENCs Manager, RENC Chair, RHC, NCWG	Recommendations and Resolution at IHO-A1 (tbc)	Complete Actions WENDWG6/05 and 06 New Edition of S-11 Part A including ENC Scheming in progress to be reviewed at NCWG-2.

Work Item	Title	Priority H-High M-Medium L-Low	Next Milestone	Start Date	End Date	Status P-Planned O-Ongoing C-Completed S-superseded	Contact Person(s). Participants	Deliverable	Remarks
C.1	Provide revised RHSG paper on WENC	M	WENDWG5	2013	June 2015 (IRCC7)	C	RENCs		WENDWG5-04C. Action WENDWG5/03: Recommendation is that RHSG is to be disbanded while RENC Harmonization issues remain in the programme of work (C.2) Complete
C.2	Report on RENC Harmonization issues and progress made	M	WENDWG7	--	Permanent	O	RENCs		Done for 2015-16
D.1	Provide a joint RENC paper a paper on the benefits for ENC Producer Nations either to join a RENC or to distribute their ENCs through a RENC	M	May 2015	2014	WENDWG6	C	RENCs		Action WENDWG5/17 Complete
D.2	Create a documents repository on the IHO WENDWG webpage	H	April 2015	2015	June 2015	C	IHB		Action WENDWG5/05 Complete
D.3	Monitor ENC Producers who distribute their ENCs through a RENC	H		2014	Permanent	O	RENCs, IHB		IHO CL 59/2014 refers. Done for 2015-16 Actions WENDWG6/08 and 09

Work Item	Title	Priority H-High M-Medium L-Low	Next Milestone	Start Date	End Date	Status P-Planned O-Ongoing C-Completed S-superseded	Contact Person(s). Participants	Deliverable	Remarks
E.1	Ensure harmonization use of CATZOC and increase resolution of bathymetric contour lines	M		2016	Permanent	P	ENCWG, ENC Producers		Action WENDWG6/21
F.1	Monitor global ENC Coverage	H		2014	October 2015	O	UK		Done for 2015-16. Action WENDWG6/12
F.2	Using risk assessment methodologies, identify and consider ENC Gaps	H		2014	Permanent	P	RHCs, IHB		To be continued and improved by RHCs. Very good report made by MACHC at WENDWG6. Action WENDWG6/11
F.3	Provide and update the List of Ports (and moorings) database	H	WENDWG7	2014	Permanent	P	UK, US, RHCs, IHB		Action WENDWG6/10

Work Item	Title	Priority H-High M-Medium L-Low	Next Milestone	Start Date	End Date	Status P-Planned O-Ongoing C-Completed S-superseded	Contact Person(s). Participants	Deliverable	Remarks
F.4	Provide relevant SPIs and WPIs on ENC adequate Coverage and ENC Producers	H		2015	December 2016	O	Chair (supported by UK), RENCs, IHB		WENDWG5-04A refers Action WENDWG5/21 Complete for 2015, continue in 2016 To be reassessed after IHC17/IHO-A1 Actions WENDWG6/13, 14
H.1	Continue the development of the IHO ENC Catalogue	H		2014	2017	O	IHB, UKHO, Jeppesen, RENCs		Done for 2015. Progress expected in liaison with RENCs and Industry in 2016 Actions WENDWG6/15, 16, 17
H.2	Deliver the RENC ENC Catalogue and Overlap Checker to RHCs and IHB	H	March 2015	2014	June 2015	C	RENC (PRIMAR), IHB		Complete, but no evidence of interest or feedback from RHCs in general
I.1	Provide support to CBSC on request for compelling requirements in the scope of the WENDWG activities	M		2015	WENDWG7	P	RHCs		

Work Item	Title	Priority H-High M-Medium L-Low	Next Milestone	Start Date	End Date	Status P-Planned O-Ongoing C-Completed S-superseded	Contact Person(s). Participants	Deliverable	Remarks
J.1	Identify articles in WEND Principles and Guidelines that are considered not fully implemented	M	IRCC8	2015	2017	P	FR, and correspondence group		In progress Action WENDWG6/18
J.2	Identify barriers that prevent these articles to be implemented	M		2015	2017	C	FR, and correspondence group		Complete
J.3	Make proposals for corrective actions	M	IRCC8	2015	2017	P	FR, and correspondence group		In progress Action WENDWG6/18
J.4	If no action identified, assess long term consequences	M	IRCC8	2015	2017	P	FR, and correspondence group		In progress.

Work Item	Title	Priority H-High M-Medium L-Low	Next Milestone	Start Date	End Date	Status P-Planned O-Ongoing C-Completed S-superseded	Contact Person(s). Participants	Deliverable	Remarks
J.5	Improve ENC full accessibility	H	IRCC8	2016	WENDWG7	P	UKHO, Jeppesen		Action WENDWG6/22
K.1	Provide systematic advanced notices of AIO to ENC Producers in case of safety issues and seek agreement and report on progress made on the information flow	H	IRCC8	2015	Permanent WENDWG6	P	UK All		On-going Report(s) provided at WENDWG6 Actions WENDWG6/19, 20
K.2	Provide AIO benefits/risks evaluation, description of information flow, views from NCWG and final recommendations	H	Sept. 2015 (for HSSC7)	2015	WENDWG6	C	UK, All, Chair		Complete