16th MEETING OF THE IHO INTER-REGIONAL COORDINATING COMMITTEE
IHO-IRCC16
Puerto Ayora, Galapagos, Equador, 10-12 June 2024

Report of the Worldwide ENC Database Working Group

Submitted by:	Chair, WENDWG
Executive Summary:	WENDWG Annual Report to the IRCC
Related Documents:	None
Related Projects:	None

Chair:	Jens SCHRÖDER-FÜRSTENBERG, Germany
Vice-Chair:	Jason SCHOLEY, United Kingdom
Secretary:	Yves GUILLAM, IHO Secretariat
Memberships:	Open to all Member States, representatives from each RENC, representatives from each RHC, representatives from the HCA, and a representative from the IHO Secretariat

1. Meetings Held During Reporting Period

WENDWG14 – 20-22 February 2024 – Norfolk, VA, USA

2. Work Program

Accomplishments 2023 - 2024

WEND-100 Principles and Guidelines on the Implementation of the WEND-100 Principles
The WEND-100 Principles became part of the IHO Resolutions in 2021. Up to now, noting the priority given to Phase I S-100 products and ENDS in the S-100 Implementation Roadmap, the WENDWG considered the WEND-100 Principles sufficient to meet the objectives. Every WENDWG meeting has an agenda item to consider possible extensions of the WEND-100 Implementation guidelines.

Amendment to the WEND-100 Principles and the S-100 Roadmap are under consideration by WENDWG; taking into account the maturity of S-100 products. One example is the provision of S-128 (Catalogue of Nautical Products) which can be provided both as a version of the ENDS distributors or at a version of responsible HOs at national level.

The WENDWG established an ad hoc drafting group for preparing amendments to the Guidelines on the Implementation of the WEND100 Principles and inputs for the revision of the IHO Strategic Plan,

WEND-100 IGIF Product and Service Matrix
As a response to missing adequate and efficient methods to calculate the S-100 readiness status on national, regional and global levels, WENDWG developed the WEND-100 IGIF Matrix following the UN GGIM's IGIF nine strategic pathways. The matrix ensures that a reporting HO considers the UN-Integrated Geospatial Information Framework pathway principles when introducing S-1xx products. The Matrix aims to assist S-1xx product providers in considering good practices, such as finance, data, standards, innovation, policy and legal, governance and institutions, partnerships, resources, training, capacity building and communications.

Only 50% of the Regional Hydrographic Commissions (including HCA) responded with a total score of 45.85. The problem with the score is the missing score reference. Even managing a score of 100.00 does not indicate the

real capacity of providing an adequate data coverage information relevant to IMO NCSR when reported on an annual basis by the IHO Secretariat.

However, the matrix remains very useful as it provides a summary of good practices, a comprehensive and thematic practical check-list to be considered when setting up an S-100 service at national and regional level.

S-100 Coordinator
The WENDWG noted a lack of S-100 Coordinators in several Regional Hydrographic Commissions. The S-100 Coordinator role goes far beyond the traditional Charting Region Coordinator (Region X ICCWG in general). An S-100 Coordinator should consider the following responsibilities:

•   Keep an inventory of S-100 products in the region;

•   Work to ensure that regional MS understand what S-100 products are available from which organisation in their region;

•   Provide input to the S-100 readiness and successor surveys to WENDWG;

•   Provide input to the WENDWG on RHC preferences regarding WEND-100 Principles;

•   Help to communicate the latest WEND-100 Principles updates to RHC; and

•   Work to coordinate new S-100 products according to WEND-100 Principles (as they are developed), following overlap, distribution and other guidance as agreed.

The IHO Secretariat took the initiative of collecting the information available with regard to S-100 coordination in the RHCs. The current draft list of S-100 Coordinators in Regional Hydrographic Commissions is available on the IHO website > Publications > Standards, provisionally under the S-11 Part B section. **IRCC should note that Türkiye objects** on the content of this List of Coordinators for the MBSHC/Region F. This issue is planned to be addressed at the 24th Conference of the MBSHC early July.

S-128
The WENDWG reviews the intended S-128 provision methods. These methods may have effects on the RENC operations, in particular the management of real-time data. The WENDWG identifies also impacts on the current ENC data flow between producers and distributors. One major future WENDWG focus is to discuss the controlled distribution chain of S-100-based applications across various distribution platforms.

The S-128 content itself is under the NIPWG responsibility. WENDWG agreed that the S-128 content is important for automated INToGIS III updates in the near future.

INToGIS III Development
The WENDWG commended KHOA and other contributors on the work done to date on the development of INToGIS III. A prototype version is available. The WENDWG noted the importance of INToGIS III for sharing S-100 product and ENDS coverage provisions through S-128 when available, and through a specific S-128 → INToGIS III interface for Phase I products in the planning phase, commencing…now! It was also noted that future INToGIS III function are useful for Member States and RHCs to scheme the future coverage of S-100 based products and data services and also for extracting SPIs automatically.

ROK representatives were invited to liaise with the IHO Secretariat and WENDWG Chair to develop a management plan of the INToGIS III Project to ensure that a solution to prevent the delay can be found shortly (risk assessment: high). In March, a fruitful VTC meeting was held between KHOA and the IHO Secretariat. After a testing phase by the Secretariat, then by some Regional Coordinators, INToGIS III is planned to be commissioned in October 2024.

If further delay is unavoidable off-the-shelf interim solutions should be used to keep S-100 implementation stakeholders informed. WENDWG took note, for instance, of the German proposal to provide intended S-100 product coverage using open-source software QGIS.

The WENDWG also appreciates US-NGA's contribution to INToGIS II, the weekly updates of the World Port Index and the Global Maritime Traffic Density Service.

Chart Scheming Update
Following WENDWG 12, the S-101 Scheming Guidelines Project team was placed on standby, where it remains. The WG still cannot find common ground for pursuing a global common grid scheme, so it has decided to task RHC Chart/S-100 Coordinators with reporting their planned S-101 chart schemes for each region, usage bands 1 – 4. The Group requested that submissions use INToGIS III if and when it is commissioned.

RHC related issues
Participation and contribution
The WENDWG14 meeting received reports from 13 of 15 RHCs. That is considered a big improvement in participation and bases on the communication efforts by the old and new WENDWG office bearer.

Summary of RHC/HO responses on S-100 readiness status survey
Aiming a better traceability, the WENDWG office bearer in cooperation with the IHO Secretariat, developed a new S-100 readiness status paper as the basis of a new survey. A respective WENDWG CL was issued and circulated.

We took note that the survey invitation needed to be clearer and that it caused some confusion among Member States. We missed information on how to proceed with the S-100 IGIF Matrix. However, the participation and responses were significant. The IHO Secretariat can use the findings for further actions. The IHO report to the IMO NCSR committee will benefit from the survey. It is planned to repeat the survey in 2024 and 2025.

The responses received to the 2023 S-100 readiness status survey indicate that most HOs seeking support in S-57 $\rightarrow$S-101 conversion and in developing production environment for other S-100 products. Although noting the importance of providing a full set of S-100 products in a certain area rather than providing global S-101 coverage, the most HOs indicate that they are facing problems with S-57$\rightarrow$S-101 conversion. Consequently, the production of other S-100 products has no priority.

The S-100 readiness status survey had a response rate of 44 submissions from the 104 Member States and two non-IHO Member States listed in the IHO P-5. This is a response rate of 42.31% of the Member States.

Thirty-eight Member States are following an S-1xx implementation plan and they intend to provide the first products in 2025. The majority of the remaining Member States developing such an implementation plan and they expect the plan ready by 2025-2027.

The production of S-101 and S-102 is the top priority followed by S-104, S-111 and S-124.

Thirty Member States plan to provide S-124 products. However, this is not relevant as many HOs are not responsible to provide S-124 products. Fourteen Member States plan the production of S-128 datasets.

The average rate to fulfil SPI 1.3.1 is 53%. After careful consideration of the figures, the WENDWG14 meeting decided to determine the number if ENC producers (currently 69 Member States) as new reference point in 2024.

According to the RHC responses, the S-100 coordination readiness level in RHCs for meeting 2026-2029 milestones is a follows:
-        BSHC (very good)
-        USCHC (very good incl. S-411, S-412)
-        EAtHC (good)
-        HCA (intermediate inc.. S-411)
-        SAIHC (low)
-        SWAtHC (intermediate)
-        MBSHC (low)
-        EAHC (low)
-        MACHC (intermediate)
-        SWPHC (low)
-        ARHC (low)
-        NSHC (low)
-        NIOHC (low)

- SEPRHC (no information)
- RSAHC (no information)

Terms of Reference
The current ToR reflect all aspects of the WENDWG work. Keeping the ToR unchanged would have no negative impact on the WENDWG work and performance. (**ANNEX A**)

Program of Work
The WENDWG Program of Work (**ANNEX B**) was updated according to the new ToR.

3.   Progress on IRCC Action Items
IRCC14, Action 13:
WENDWG to provide the template for SPI 1.3.1
Status: Complete. See RHC related issues, Summary of RHC/HO responses on S-100 readiness status survey.

IRCC15, Action 6:
WENDWG to liaise with HSSC on how to mirror the HSSC ISO Cell on S-101 with the following scope: RHC S-101 production/coordination/distribution in the near future.
Status: Complete. However, WENDWG noted a lack of resources to implement ISO Cell on RHCs S-101 production.
The WENDWG agreed on the potential benefits of introducing ISO 9001-like Principles into S-100 Coordination and Production activities.

IHO Inclusivity policy
Status: Complete. In accordance with Art. 3.b of the TORs, the WENDWG agreed on the principle of in-person plenary meetings at policy level (representation according to the TORs, National Hydrographers preferable when representing MS, designated representative of the RHCs), once a year, with virtual meetings between plenary meetings for addressing specific issues.

4.   Problems Encountered

Existing ENC coverage overlaps
Some critical overlaps at UB5 (Harbour) exist in the Region H, not solved for several years. This circumstance will be not accepted at all when moving to the S-101 ENC world. (The meeting noted objections raised by Türkiye on this statement and on the application of the measures planned in IHO Resolution 1/2018 to eliminate overlaps.

Some overlaps at UB2 exist in the Region I, not solved for several years. This circumstance will be not accepted at all when moving to the S-101 ENC world.

Maturity status of S-100 product specifications
Various RHCs raised concerns regarding S-101 spec still being in draft. Future delays in finalization will lead to RHCs not being able to produce S-101 by Jan 2026 as vendors need time to implement the specs into software. The currently provided S-101 release schedule indicate that the product specification will tentatively experience Member State approval by Q4/2024 and that possibly production software will be ready by Q1-2/2025.

Accessibility of material on the IHO e-learning platform
The RENCs provided links to their learning platforms to IHO. The IHO e-learning centre should consider providing those links on their website.

INToGIS III commissioning delay
The INToGIS III development is progressing slowly, due to unpredictable circumstances. Solutions are under consideration with uncertain result. See INToGIS III discussion above.

5.   Any Other Items of Note

HSSC16 Submission (Challenges in ensuring a harmonised approach in S-1xx product data)
Germany, on behalf of WENDWG, submitted a paper on "Challenges in ensuring a harmonised approach in S-1xx product data" to the recent HSSC meeting. (see **HSSC16-07.1D**)

HSSC16 Submission (S-124 Data Dissemination issues related to e-navigation)
During the WENDWG14 Stakeholder forum FURUNO provided the vision on standardized services for ECDIS and recommended considering the implementation of pull-mode cyber secure options from different sources of information using the SECOM interface (IEC 63173-2) on the Maritime Connectivity Platform for instance. This proposal was taken by Germany to assess further the current limitations of data provision by radio signals. Germany submitted a paper discussing the S-124 status and related regulatory IMO and ITU framework to HSSC. This paper also addresses the future provision of S-104 and S-111 data products. Although data transmission is not in the remit of IHO, the complexity was elaborated and provided in paper. (see **HSSC16-07.1C)**

Communication strategy
WENDWG identified a need to consider the development of a communication strategy towards end-users, manufacturers, IMO, addressing readiness and expected geographic coverage of S-100 based products and data services in the following years, from 2026 onward.

Revision of S-100 roadmap
The S-100 Roadmap should highlight that the S-100 strategic approach to support and attract end-users for the IHO is <u>not</u> to complete the full S-101 coverage first, then consider the other products. Rather IHO Committees should be engaged into the development of a new distribution model , including cybersecurity and integrity measures and ensuring that end-users can easily access and get all S-100 Phase I products and ENDS in confidence along a given route.

The WENDWG recommends IRCC to raise the awareness of the RHCs and their Members on this strategic insight.

Development of a new Part C of the S-11 Standard
The WENDWG established an ad hoc S-11 - Part C drafting team to develop a proposed Edition 1.0.0 of S-11 Part C – *GUIDANCE FOR THE PREPARATION AND MAINTENANCE OF ELECTRONIC NAVIGATIONAL DATA SERVICES (other than S-101ENC)* –, to be submitted to the approval of IRCC in 2025 for testing and experimentation (in accordance with IHO Resolution 2/2007).

The proposed table of content is provided in **ANNEX C** for IRCC endorsement.

IHO Reports to IMO
The IHO is requested by IMO bodies to report regularly on ECDIS related matters for which the IHO engages accountability. From 2026 onwards the global coverage with S-101 data becomes important.

Aiming to reduce the parallel S-57/S-101 production burden, one important goal will be the sunset of S-57 ENCs. The IHO needs to determine thresholds at which S-101 coverage enables the sunset of S-57 in a way that causes no safety risk for navigation.

The proposed survey to be conducted from 2026 onwards is provided in **ANNEX D**. It should be noted that full INToGIS III functionality could make the survey superfluous. The necessary statistics can be derived from INToGIS III if all information is stored correctly.

6.   Conclusions and Recommend Actions

Refer to report item 8.

7.   Justifications and Impacts

No additional items to report.

8.   Action Required of IRCC (Order: Necessary, Important, Nice-to-do)

NECESSARY

a.   Note the 2023-24 accomplishments of the WENDWG

b.   Recommend the RHCs to develop their schedule to meet the 2026 IMO target (S-100 ECDIS) and share their own roadmap at the next WENDWG and IRCC meeting. (support preparation of the next IHO Strategic Plan (2027-2032)

c.   Urge NIOHC and SAIHC to address the overlaps and to resolve them as a top priority issue.

d.   Recommend RHCs to consider more carefully the possibility of developing a capabilities-based approach at regional level; noting the complexity of the S-100 eco-system.

e.   Task the WENDWG to a) develop further the S-11 Part C table of content, and b) continuation of drafting work; targeting completion by IRCC17

IMPORTANT

f.   Task the WENDWG to propose a draft guidance on future assessment of S-57 sunset determination at IRCC-17

g.   Recommend the RHC to continuously authorize the provision of their ENC data (such as CATZOC values) - and possibly other S-1xx data in the future -, through the RENCs, to the IHO Secretariat for the automated calculation of future SPIs as required.

h.   Task WENDWG to continue determination of S-100 production readiness level and expected geographic coverage of S-100 based products and data services from 2026 onwards.

i.   Recommend CBSC to allocate some CB support in S-100 to IHO MS under RHCs coordination, preventing the IHO from failing the commitments against the IMO.

NICE-TO-DO

j.   Recommend the harmonization of assessment procedures in the future, preferably in liaison with the RENCs, to limit the number of annual surveys to IHO MS.

k.   Recommend CBSC to provide links into the IHO e-Learning Centre webpage to get access to the offers made by the RENCs

l.   Recommend RHCs to update the list of List of Charting Coordinators to S-100 under publication S-11 Part B "as is

m.   Note the work initiated on expanding "Guidelines on the Implementation of the WEND100 Principles" and the revision of the IHO Strategic Plan"

n.   Initiate the revision of the S-100 roadmap and consider in parallel the communication strategy for highlighting the importance to not solely focus on S-101 coverage. To present the S-100 benefits sophisticated distribution models, including cybersecurity and integrity measures to access other ENDS should be developed.

O.   Note the submission paper from the WENDWG to HSSC on the complexity of regulatory framework in providing ENDS by radio signal and possible impacts on service establishment.

ANNEX A

WORLD-WIDE ELECTRONIC NAVIGATIONAL CHART DATABASE WORKING GROUP (WENDWG)

Terms of Reference

Ref: 1) 1st IRCC Meeting (Monaco, June 2009)
          2) 5th IRCC Meeting (Wollongong, Australia, June 2013) – Approval of amendments from WENDWG3
          3) 9th IRCC Meeting (Paramaribo, Suriname, June 2017) – Alignment with the amendments to the
          Convention on the IHO (IHO CL 41/2016 refers)
          4) 10th IRCC Meeting (Goa, India, June 2018) – Expansion of the scope
          5) 11th IRCC meeting (Genoa, Italy, June 2019) – Support of the S-100 Implementation Strategy
          6) 15th IRCC Meeting (Tokyo, Japan, June 2023) – Upgrade to incorporate S-100 implementation

1. **Objective**

    a. The purpose of the WEND Working Group is to advise IRCC to enable the highest societal value of
        Member State effort by:

        i.   Facilitating a world-wide consistent level of high-quality, updated official S-57 and S-101 ENCs, and
             ENDS (as well as other S-100 products and services), once those products reach operational
             maturity, through integrated services that support chart carriage requirements of SOLAS Chapter V,
             and the requirements of the IMO Performance Standards for ECDIS.

        ii. Reviewing options, and recommending actions, that expand the value of the Worldwide ENC
             Database and S-100 product and service stack to all marine data users applying data management
             principles.

        iii. Supporting the S-100 based products and services implementation strategy.

             A. Aiding IRCC in reporting on measurement and progress toward its assigned Strategic
                 Performance Indicators (SPI), through appropriate tools.

2. **Authority**

    a. This WG is a subsidiary of the Inter Regional Coordination Committee (IRCC). Its work is subject to
        IRCC approval.

3. **Procedures**

    a. The WG should:

        i.   Monitor the development of adequate ENC and S-100 product and service coverage to meet
             carriage requirements for ECDIS.

        ii. Develop proposals:

             A. for speeding up ENC and S-100 production;

             B. ensuring uniform ENC and S-100 product and service quality and consistency;

             C. making data available worldwide;

             D. taking advantage of any offers for production assistance, or other ways of mutual assistance
                 and cooperation.

iii. 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.

iv. 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.

v. Support Regional ENC Coordinating Centres (RENC) cooperation and operations.

vi. Maintain the WEND-100 Principles and the Guidelines on the Implementation of the WEND-100 Principles, as appropriate, in order to support the production and dissemination of S-101 ENCs and other S-100 products and services.

b. The WG should conduct its business by correspondence to the maximum extent possible, including but not limited to email, virtual meetings, or teleconferences. However, the group will plan to meet in-person annually.

c. The date and location of WG meetings should normally be announced by the Chair by the end of the previous meeting.

d. All members shall inform the Chair in advance of their intention to attend meetings of the WG.

e. Decisions of the WG shall be made by consensus.

f. The draft record of meetings shall be distributed by the Chair (or the secretary) within six weeks of the end of meetings and participants' comments should be returned within three weeks of the date of dispatch. Final minutes of meetings should be posted on the IHO website within three months after a meeting.

g. Drafting groups and other project teams may be created by the WG or proposed to IRCC to undertake detailed work on specific topics.

4. Composition and Chairperson

a. Membership of the WG is open to all Member States of the IHO. The WG shall comprise representatives from IHO Member States, representatives from each RENC, representatives from each RHC[1], representatives from the HCA, other subject matter experts as deemed appropriate by the IRCC; and a representative from the IHO Secretariat. The IHO Secretariat will also provide a secretary. A membership list shall be maintained and posted on the IHO website.

b. Expert Contributors may be invited to join the WG or present at WG meetings as required, according to the task at hand. Expert Contributors shall be invited by the Chair.

c. The Chair and Vice-Chair shall be representatives of IHO Member States and shall be decided by vote of the IHO Member States present and voting at a meeting. The election of the Chair and Vice-Chair shall be decided at the first meeting after each ordinary session of the Assembly. If the Chair is unable to carry out the duties of the office, the Vice-Chair shall assume the Chair with the same powers and duties.

d. The requirement for the continued existence of the WG shall be reviewed at each meeting of the IRCC.

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[1] Up to RHCs, but preferably ENC and S-100 Coordinators

ANNEX B

WENDWG Work Programme 2024-25 (Note: Objectives of WENDWG Work Programme for 2024-25 now aligned with new ToRs approved at IRCC-15)

Objectives (WENDWG TORs Ed. June 2023 refer)

1. Facilitate a world-wide consistent level of high-quality, updated official S57 and S-101 ENCs, and ENDS (as well as other S-100 products and services), through integrated services that support chart carriage requirements of SOLAS Chapter V, and the requirements of the IMO Performance Standards for ECDIS;

2. Review options, and recommending actions, that expand the value of the Worldwide ENC Database and S-100 product and service stack to all marine data users applying data management principles;

3. Support the S-100 based products and services implementation strategy;

4. Supports IRCC in reporting on measurement and progress toward its assigned Strategic Performance Indicators (SPI), through appropriate tools.

Tasks

A	To assess overlapping ENC data issues within ECDIS and make progress to solve them, before S-100 ECDIS comes into force
B	To maintain IHO Resolution 1/2018 on overlapping ENC data, particularly in areas of demonstrable risk to the safety of navigation
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 and monitor possible new distribution models for other S-100 Products and ENDS
E	To ensure data quality and consistency
F	To monitor ENCs (S-57) coverage and the development of the scheming plans for ENCs (S-101), S-1xx and ENDS and their subsequent coverage when produced
G	To support the IHO communication strategy towards stakeholders (HOs, IMO, OEM, end-users) on S-100 and ENDS
H	To maintain the IHO ENC Coverage Catalogue and through the development of INToGIS **III,** aiming to include the catalogue of S-100 Products & ENDS (schemed, produced) incl. interoperability with S-128 files, when available.
I	To provide support on capacity building related to WENDWG activities, as appropriate
J	To support IRCC in the annual assessment of Strategic Performance Indicators and the revision of them for the future Strategic Plan (SP) if appropriate
K	To provide Guidelines for the Coordination and Management of the Development of S-100 Electronic Navigational Data Services (except S-101 ENCs) in RHCs

L	To support non-ECDIS maritime community ~~through license management of ENC data~~
N	To maintain the WEND-100 Principles and associated Guidelines as key component of the Roadmap for the S-100 Implementation Decade, the Dual Fuel concept for S-100 ECDIS, and contribute to the Revision of the IHO Strategic Plan in preparation of the IHO SP 2027-2032.

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
A1	Assessment of overlapping S-57 ENCs	H	WENDWG15	2024	2026	O	SAIHC Chair, NIOHC Chair	Situation report	WENDWG14/18 and /19
B.3	Monitor the implementation of the IHO Resolution on the Elimination of overlapping ENC data in areas of demonstrable risk to the safety of navigation	M	WENDWG15	2018	Permanent	O	Chair, RHCs, RENCs, IHO Sec	If options already available in IHO Resolution 1/2018 are considered not applicable, amendments to this Resolution to consider, suitable for safety of end-users.	IHO Resolution 1/2018 in force (IHO CL 19/2018 refers). Specific attention to S-101 (outcome of S-57 conversion process in remaining overlapping areas).

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.2	Report on RENC Harmonization issues and progress made	M	WENDWG15	--	Permanent	O	RENCs	Recommendations	WENDWG14/12
D.3	Monitor ENC (S-57, S-101) Producers who distribute their ENCs through a RENC	M	WENDWG15	2014	Permanent	O	RENCs, RHCs, IHO Sec.	Updated ENC Data Flow Diagram (EAHC RECC now included)	IHO CL 59/2014 refers. Done for 2024. Impact of WENDWG14/23 to be reported at WENDWG15
D.4	Monitor the distribution model(s) for S-100 ENDS in liaison with the RENCs	M	WENDWG15	2024	Permanent	P	RENCs, RHCs, IHO Sec.	S-100 ENDS Data Flow Diagram	WENDWG14/14
E.1	Monitor data consistencies and harmonization issues	M	WENDWG15	2024	Permanent	O	All	Inputs to technical WGs and RHCs	WENDWG14/41 and /42
F.1	Monitor global and regional **S-57** ENC Coverage	M		2014	Permanent	C	UK, RHCs	Annual statistics	Reports are now made by RHCs Rep. at WENDWG meetings

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.2	Monitor global and regional **S-101** ENC Planned Coverage	H	WENDWG15	2024	Permanent	P	Chair, RHCs, IHO Sec.	Annexes to IHO Reports to IMO, GIS overview at IRCC , RHCs meetings	
F.3	Monitor global and regional **other S-100 and ENDS Phase I** Planned Coverage	H	WENDWG15	2024	Permanent	P	Chair, RHCs, IHO Sec.	Annexes to IHO Reports to IMO, GIS overview at IRCC , RHCs meetings	
F.4	Maintain the List of INT Charts/ENCs/S-100 & ENDS Regional Coordinators	M	WENDWG15	2024	Permanent	O	WENDWG Sec., RHCs.	List available online S-11	WENDWG14/37
G.1	Support IHO Communication Strategy on S-100 and ENDS	H	WENDWG15	2024	2016 onwards	P	Chair, IRCC, Council	Brief and key messages, flyers	WENDWG14/20 and /32 WENDWG14/40

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
H.1	Continue the maintenance of the IHO ENC Coverage Catalogue	H		2014	Permanent	O	IHO Sec., UKHO, RENCs		Overtaken by development of INToGIS III
H.2	Monitor the development and maintenance of INToGIS III as part of the IHO GIS Infrastructure and S-100 & ENDS Phase I	H	WENDWG15	2021	2025	O	ROK, IHO Sec.		WENDWG14/35 and /36
H.3	Monitor approved ENC schemes in every charting regions (S-57 ENCs, now including S-101 ENCs), at least for small scales	H	WENDWG15	--	Permanent	O	RHCs	ENC Schemes available online through INToGIS III	
I.1	Provide support to CBSC on request for compelling requirements in the scope of the WENDWG activities	H	WENDWG15	2015	--	P	RHCs, ENC Producers	Shared-capacities plans in RHCs, e-Learning	As appropriate. S-101 Producing challenges WENDWG14/56. WENDWG14/24
J.1	Invite Producers to authorize provision of ENC data values (CATZOC, …) to the IHO Secretariat, through the RENCs, for SPI calculation	M	WENDWG15	2021	Permanent	O	ENC Producers, RENCs, IRCC, IHO Sec.	SPI 1.2.2 in IHO Annual Reports and reports to RHCs.	WENDWG14/15

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.2	Monitor RHCs **S-100** Readiness Level	H	WENDWG15	2024	Permanent	O	Chair, IRCC, RHCs, RENCs, IHO Sec.	SPI 1.3.1 in IHO Annual Reports and reports to RHCs.	WENDWG14/16. Annual Surveys by Chair. RENCs in support if possible.\n\nWENDWG ISO9001 Cell not activated (lack of resources)
J.3	Contribute to the revision of the IHO Strategic Plan	M	WENDWG15	2024	2025	O	Vice Chair and ad hoc drafting team	Recommendations to IRCC	WENDWG14/45 and /46
K.1	Develop and maintain Guidelines for Coordination, Management and Development of S-100 ENDS in RHCs	H	IRCC16/17	2024	2026	O	Chair and ad hoc drafting group S-11 Part C	S-11 Part C	WENDWG14/48 and /17.
N.3	Develop S-101 ENC Scheming Guidelines	H	WENDWG14	2021	2024	O	JP leading drafting group	Guidelines	WENDWG14/06 and /50.

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
N.4	Maintain S-1xx Implementation ENC Guidelines	H	WENDWG14	2021	2024	O	Chair	Guidelines	
N.5	Contribute and propose amendments to the Roadmap for the S-100 Implementation Decade	M	IRCC16	2021	Permanent	O	Chair		To be considered in 2024 (INToGIS III, etc.).
N.6	Contribute to the maintenance of the Dual Fuel Concept for S-100 ECDIS	M	15 March	2024	2026	O	Chair	Proposed amendments to IRCC/S-100WG Chair	WENDWG14/13
~~N.6~~	~~Monitor WEND100 –IGIF Matrix per Region /per S-1xx Product) for the S-100 Implementation~~	~~H~~	~~/WENDWG-14~~	~~2022~~	~~Permanent~~	~~O~~	~~Chair~~		WENDWG14/27
~~N8~~	~~Develop new IHO Publication Guidance for the Preparation and Maintenance of S-100 Products Schemes in RHCs~~	~~M~~	~~WENDWG14~~	~~2024~~	~~2026~~	~~P~~	~~Chair/Vice-Chair/Sec~~		~~rather than S-11 Part A Section 300. NCWG to revise Section 200.~~ Superseded by K.1

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
~~N9~~	~~Monitor RHCs plans to meet the 2026 IMO target (S-100 ECDIS)~~	~~H~~	~~WENDWG14~~	~~2023~~	~~2026~~		~~RHCs Reps.~~		Superseded by J.2

Meetings

Date	Location	Activity
February 2024	Norfolk, VA, USA	WENDWG-14
February 2025	Wollongong, Australia	WENDWG-15
February 2026	Hong Kong, China (TBC)	WENDWG-16
February 2027	TBC, Türkiye	WENDWG-17

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ANNEX C

S-11 Part C   see Document **IRCC16_07D1**

ANNEX D

S-101 coverage check (regional and national level)

Line	Question			Answer			
1	Organisation						
2	E-Mail Address						
3	Do you produce S-101 products?	Yes	Go to line 4				
		No	Go to line 6				
4	How big is the estimated current S-101 ENC coverage? Please refer only to the S-101 ENC scale bands provided by your organisation. The standardisation body recognises that HOs will provide S-101 ENCs only for a subset of listed scale bands. For large-scale bands (12 and above) compare planned coverage against managed coverage.			Scale Band			Estimated Coverage (%)
				1	NULL	10,000,000	
				2	10,000,000	3,500,000	
				3	3,500,000	1,500,000	
				4	1,500,000	700,000	
				5	700,000	350,000	
				6	350,000	180,000	
				7	180,000	90,000	
				8	90,000	45,000	
				9	45,000	22,000	
				10	22,000	12,000	
				11	12,000	8,000	
				12	8,000	4,000	
				13	4,000	3,000	
				14	3,000	2,000	
				15	2,000	1,000	
5	When did you completed or when do you plan to complete a 100% spatial coverage of S-101 ENC products according to the selected scale bands? The standardisation body recognises that a 100% spatial coverage of large-scale S-101 ENCs (scale band 12 and above) is not realistic. 100% applies when your organisation managed all planned large-scale S-101 ENC cells.			Scale Band			Year
				1	NULL	10,000,000	
				2	10,000,000	3,500,000	
				3	3,500,000	1,500,000	
				4	1,500,000	700,000	
				5	700,000	350,000	
				6	350,000	180,000	
				7	180,000	90,000	
				8	90,000	45,000	
				9	45,000	22,000	
				10	22,000	12,000	
				11	12,000	8,000	
				12	8,000	4,000	
				13	4,000	3,000	
				14	3,000	2,000	
				15	2,000	1,000	
6	When do you plan to provide the first S-101 products?	Year					
7	FINISH						