

Report of the Nautical Cartography Working group (NCWG)

Submitted by:	Chair, NCWG
Related Documents:	NCWG6 Minutes, Baseline Symbology VTC Report.
Related Projects:	Future of the Paper Nautical Chart

Chair:	Mikko Hovi (Finland)
Vice-Chair:	Nick Rodwell (UK)
Secretary:	Edward Hands (Norway)
Member States:	Argentina, Australia, Brazil, Canada, Denmark, Estonia, Finland, France, Germany, Greece, India, Indonesia, Iran, Italy, Japan, Korea (Rep of), Latvia, Netherlands, New Zealand, Norway, Pakistan, Russia, South Africa, Spain, Sweden, Turkey, Ukraine, UK, USA (=29)
Expert Contributor Organisations:	IHO Secretariat, ICA, Navico Norway, Esri, Teledyne Caris
<i>see Annex A for full membership details</i>	

1. Meetings Held During Reporting Period

- 1.1 NCWG6 – A VTC meeting was held 3-4 November 2020. The full report from this meeting can be found on the NCWG page of the IHO website.
- 1.2 A supplementary VTC meeting was held 1 March 2021 to discuss the issue of baseline symbology. The full report from this meeting can also be found on the NCWG page of the IHO website.
- 1.3 NCWG7 is planned to be held 9-12 November 2021 in Cadiz, Spain, and/or by VTC.

2. Work Program

- 2.1 S-4 Chart Specifications of the IHO and Regulations for International (INT) Charts
 - 2.1.1 S-4 edition 4.9.0 is to be adopted as a result of member states votes in response to IHO CL 02/2021 dated 11 January.
- 2.2 Maintenance of S-4 supplementary publications INT 1, INT 2, INT 3
 - 2.2.1 INT1 Symbols, Abbreviations and Terms used on Charts. There are three official language versions of INT1. Their current status is:
 - Spanish language version published by ES/IHM: Edition 6, April 2018.
 - French language version published by FR/SHOM: Edition 7, 2019.
 - English language version published by UK/UKHO: Edition 8, November 2020.
 - 2.2.2 The UK has now taken over responsibility for publishing the English language version of INT 1 and the first new version was published in November 2020. It is noted that the new version is edition 8 and that this is out of sequence with the previous German version, which was edition 9. The edition numbering difference is due to the UK national product having a different number to the existing INT 1. Changes to the content of the new INT 1 are limited to branding changes such as the

inclusion of the IHO seal and reference to INT1 in the title and some other minor changes to bring it in to closer agreement with the existing INT 1 versions. Some additional changes will be required at the next edition. There are no new symbols in this edition of INT1; these will be included in subsequent editions after the INT1 SubWG has considered further changes.

- 2.2.3 The sub-working group continues to discuss the future options for INT 1. Mariners will continue to require access to a hard copy version of INT 1; in addition, it is acknowledged that Hydrographic Offices could make improvements regarding access and use of INT 1.
- 2.2.4 INT2 Borders, Graduations, Grids and Linear Scales. There are no current plans for a revision of Edition 4, 2007, published by NL.
- 2.2.5 INT3 Use of Symbols and Abbreviations. There are no current plans for a revision of Edition 5, 2011, published by UK.

2.3 S-11 Part A Guidance for the Preparation and Maintenance of International Chart Schemes

- 2.3.1 The status is Edition 3.1.0, published February 2018. Although there are no current plans for a revision it is acknowledged that Section 200 is currently very S-57 centric and some future amendments are considered necessary to make it more S-101 compatible.

2.4 Liaison with other IHO working groups and S-100 implementation support

- 2.4.1 The working group has been working with the S-101 PT to create new symbols for new or significantly changed features in S-101, which cannot be translated directly from S-52. Some delays have been experienced in work tasks due to the pandemic but the NCWG Chair will continue to liaise with the S-101 PT.

3. **Progress on HSSC Action Items**

- 3.1 Action HSSC12/36: *NCWG to add a work item to develop ways to enable or enhance HO's ability to produce paper charts or raster chart images directly from S-101 [The goal is to create a 'Common IHO Baseline Symbology' including basic symbol sets and rules.]* - This issue received considerable discussion at NCWG 6. It was suggested that a dedicated group should be established to investigate the issue further. All interested parties were invited to a supplementary VTC meeting on 1 March 2021.

Consensus was reached at the VTC meeting that the primary aim would be to support HO's through the development of a common symbology library, colour specifications and associated rules for how to define the appropriate symbology from source data.

Whilst it was acknowledged that the development of a common symbol library would help support automation, investigations into how to achieve an automated chart production solution are not considered to be outside the remit of this task. It was agreed that such issues should be addressed as a separate task.

The decision was reached to formally establish a Baseline Symbology Project Team under the NCWG in order to add structure and maintain the direction of the work. The NCWG Rep for Canada agreed to accept the position of Project Team Lead and work to draft terms of reference for the project team is underway.

- 3.2 Action HSSC12/37: *HSSC invited CA, DK and the US to engage with the NCWG as appropriate regarding unified symbology for the production of paper charts.* – The paper jointly submitted by CA, DK and US to HSSC 12 (Ref: HSSC12-05.4C) was discussed at NCWG 6 and resulted in Action NCWG 6/2.- Canada to Provide detailed proposal of the subscription service regarding charts and nautical publications. Liaise with colleagues in NIPWG. It is expected that this paper will be submitted for consideration at NCWG 7.
- 3.3 Action HSSC12/41: *S-100WG, ENCWG, NCWG and NIPWG to develop a harmonised portrayal process for S-98.* One of the core issues regarding S-98 is how to coordinate viewing two products in one display. The S-100 WG is leading this work with contributions from the NCWG.

This action is ongoing and NCWG chair will liaise with other working groups.

4. Problems Encountered

- 4.1 The ongoing global pandemic made physical meetings impossible in 2020/21. All meetings were held via VTC and this created a number of problems. Meetings were generally a lot shorter than normal, thus limiting the discussion on various topics. The lack of physical meetings also removed the possibility for out of session discussions and networking between delegates.

However, it should also be noted that some benefits could be observed from VTC sessions. They are generally easier to arrange facilitating the possibility to meet at increased regularity. Meetings to discuss specific topics can also be convened at relatively short notice. Furthermore, they provide an opportunity for a greater number of delegates to participate as the financial constraints on attendance associated with traveling to physical meetings are removed.

Moving forward it is suggested that a combination of both physical, in person meetings as well as VTC sessions could potentially be the most efficient strategy.

- 4.2 Member states are all at different levels of progression regarding paper chart and ENC production; this presents some challenges when discussing the future of the paper chart, INT1 and S-4.

5. Any Other Items of Note

- 5.1 Following delivery of the final report of the Future of the Paper Nautical Chart SubWG at HSSC 12 the working group has now been disbanded.

6. Conclusions and Recommended Actions

- 6.1 NCWG concludes that the future of S-4 should now be viewed as part of the bigger discussion related to the development of baseline symbology.

7. **Justification and Impacts**

- 7.1 The baseline symbology work is closely related to the future of S-4 and INT1 as well as supporting the future of the paper nautical chart.

8. **Action Required of HSSC**

The HSSC is invited to:

- a. **Note** this report
- b. **Endorse** the continued activity of the working group
- c. **Endorse** the establishment of the Baseline Symbology Project Team

**ANNEX
A**

MEMBERSHIP OF NCWG
(Updated 16 December 2020)

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1 INT1subWG; 2 NCWG Portrayal subWG;

Work plan 2021-21 - Summary of progress

(updated to 4 February 2021 following NCWG6 and HSSC12 and subsequent activity, additions in red)

Tasks

A	Maintain and extend Publication S-4 'Chart Specifications of the IHO & Regulations of the IHO for INT Charts' (IHO Task 2.2.1)
B	Maintain and extend Publication S-11 Part A 'Guidance for the Preparation and Maintenance of INT Chart schemes' (IHO Task 2.2.2)
D	Development of new (and revised) symbology (IHO Task 2.2.1)
E	Maintenance of S-4 supplementary publications INT 1, 2 & 3 (IHO Task 2.2.1)
G	Conduct meetings of NCWG (IHO Task 2.1)
H	Provide technical assistance to other IHO working groups and support regarding the implementation of S-100 (IHO Task 2.3)

Work items

* Allowing for approval via HSSC (in accordance with Resolution 2/2007) before MS and publication.

No	Work item	Priority H-high M-medium L-low	Next Milestone	Start Date	End Date	Status P-Planned O-Ongoing C-Completed	Contact Person(s)	Affected Pubs/Standard	Remarks
A26	Portrayal subWG	H	Agree protocol for seeking advice from NCWG	2016		O	Chair NCWG		HSSC7 Action 18 NCWG2 Actions 5, 22, 30-32 Attendance at NIPWG Visualization workshop May 2017. NCWG3 Action 15
A28	Future of S-4	H	NCWG6 – discuss future of S-4 and agree work tasks	2020	2022	O	Chair NCWG	S-4	NCWG3 Agenda 7.4: waiting on progress with A16
E1	Maintain official INT 1s		UK to take over English INT 1 from DE and publish new edition			O	UK: Sam Lerigo FR: S Guillou ES: J. Bustamante	INT 1	DE INT 1 edition 9 published August 2018 ES INT 1 edition 6 published April 2018 FR INT 1 edition 7 published in 2019 UKHO have taken over responsibility for English INT 1 from DE and published edition 8 in 2020
E9	Develop new section V for INT1 for 'data quality'	M	Draft under consideration by INT1 subWG	2014	2021	O	Chair NCWG INT1 subWG	INT1	CSPCWG10 Action 35 NCWG3 Agenda 11.2: Transferred to UK NCWG4 – Action 4/18 ongoing
E10	Symbol library	L	UK to confirm freedom to use UK's symbol set	2016		O	UK (N Rodwell) US (C Harmon)	S-4, INT1	NCWG Actions 45, 46 NCWG3 Agenda 3: Not required to progress at this time.
E11	Develop baseline symbology to support automated chart production	H	NCWG6 – discuss and agree work tasks	2020		P		INT1, S-4	New proposal by NCWG at HSSC12 VTC Meeting held 1 March 2021 – recommendation to formally establish a Project Team.

Meetings (Task G)

Date	Location	Activity
5-8 November 2019	Stockholm, Sweden	NCWG5
3-4 November 2020	VTC	NCWG6
9-12 November 2021	Cadiz, Spain tbc	NCWG7

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