

3rd NCWG MEETING
ESRI HQ, Redlands, California, USA 16-19 May 2017

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2. Annexes:

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- F List of Acronyms and Abbreviations used at NCWG3

REPORT: (Note: The paragraph numbering is the same as in the agenda, although the order of taking the items was not exactly followed).

1. Welcome, Introductions and Administrative Arrangements

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| <i>Docs:</i> | <i>NCWG3-01A</i> | <i>List of Documents (on website)</i> |
| | <i>NCWG3-01B</i> | <i>List of Registered Meeting Participants</i> |
| | <i>NCWG3-01C</i> | <i>List of NCWG Members</i> |

Mikko Hovi (Chair, FI) welcomed everyone to the third NCWG meeting. He outlined his plans for the meeting and thanked ESRI for hosting NCWG3. He also thanked members for attending, acknowledging the cost and therefore the need to make good use of the opportunities to make progress. He mentioned the change of emphasis of the WG, from familiar paper charts to other products and noted that this could, in time, force a change to the standing agenda. He noted that NCWG is subordinate to HSSC and that the current supervising director, Gilles Bessero, would be standing down in September.

The participants introduced themselves, some of whom were attending their first WG meeting. A list of meeting participants is at ANNEX C.

Apologies had been received from the hydrographic office representatives of Australia, France, Germany, Greece, Islamic Republic of Iran, New Zealand and South Africa. Also from Justin Hornby of C-Map.

Chair advised that he would seek consensus from discussions, with one vote per MS should a vote be required. He stated that the record of the meeting would focus on main points, proposals and actions; full detailed minutes would not be taken.

2. Approval of Agenda

- Docs: NCWG3-02A Rev6 Agenda*

The WG approved the agenda. Chair advised that the record of last year's meeting had been subjected to comment at the time it was produced and could therefore be taken as read. The meeting accepted this.

3. Status of Actions from NCWG1

- Docs: NCWG2-03A Status of Actions*

Andrew Heath-Coleman (Secretary, UK) updated the meeting on the status of actions from NCWG2, including those which had been carried forward from CSPCWG9, CSPCWG10 and NCWG1.

Good initial progress had been made with most of the actions from NCWG2 (April 2016), as detailed

by the paper. Updates for actions not noted therein as completed or time expired were supplied as follows:

CSPCWG9 Action 58. The meeting agreed that this action (Sample INT1 register) is time expired. It will be regenerated if necessary.

NCWG1 Action 7. Colby Harmon (US-NOAA) agreed to take responsibility for this action (Definition of ED), as it was based on an original proposal from his CSPCWG predecessor (Rob Healy).

NCWG2 Action 2 and 3: Time expired, but to be replaced by a new action to provide early advice about the next NCWG meeting (about 6 months before) – see new action NCWG3/2. (Also to be added to NCWG procedures – see new action NCWG3/10.)

NCWG2 Action 5: Mikko Hovi, Colby Harmon, Carlo Marchi (IT) and Yves Guillam (Assistant Director IHO(Sec)) will attend the NIPWG Workshop on Visualization of Nautical Information, from which they will decide on the best way forward. Action completed.

NCWG2 Action 6: This action had not been progressed and the WG agreed to cancel it.

NCWG2 Actions 11, 14, 17, 41, 44, 49: All these actions were on the INT1 Producers and have been noted for progressing when next editions of INT1 are compiled. There were therefore removed as outstanding NCWG actions.

NCWG2 Action 18: Completed.

NCWG2 Action 20: Chair to discuss DQ options with Ron Furness (ICA). Carry forward: Mikko Hovi as new Chair to progress.

NCWG2 Action 22: Subsumed into Action 5 above.

NCWG2 Action 24: To be reported under agenda 4.5. [After meeting note: to be carried forward by new Chair]

NCWG2 Action 29: Completed.

NCWG2 Action 31: Completed. Short listing completed by Colby Harmon, to be taken forward by Mikko Hovi – new action NCWG3/3.

NCWG2 Action 32: Time expired, as conflict solving will now be undertaken by Domain Control Body.

NCWG2 Action 34: New action for WG members to report to IHO(Sec) any Foreign NMs seen which do not provide English translations – new action NCWG3/4. (Note: Nick Rodwell (UK) commented that, as UK assesses all foreign government NMs, UK should be in a good position to progress this.)

After meeting note: UK has provided a list to IHO (Secretariat).

NCWG2 Action 39: Completed.

NCWG2 Action 40: Completed by review at Agenda item 11.1.

NCWG2 Action 45: Now completed with a positive outcome, but UK to get further clarification about details - new action NCWG 3/5.

NCWG2 Action 46: Cancelled. In future, it is possible INT1 symbols will be registered and then a naming convention might be required, but no point in pursuing at this time.

NCWG2 Action 48: Completed. The UKHO directors have decided that INT3 must remain in a password protected area of the IHO website. Any non-IHO organization or member state is invited to write to UKHO with an explanation of why they wish for access to the PDF of INT3.

All other actions had been completed.

Consequential new NCWG3 Actions:

ACTION 3/1: Secretary to produce draft report of NCWG3 by end of June 2017, for participants to

approve.

ACTION 3/2: Secretary to send letter advising WG members about venue and date of next meeting 6 months ahead, ask for agenda items and offer for Chair to intervene on budgetary requirements if necessary.

ACTION 3/3: Chair to share list of possibly required symbols for S-101 among volunteers (IT, TR, DE, FI, US-NOAA, US-NGA) and to check latest S-101 data quality model is included in the list.

ACTION 3/4: WG members to advise IHO(Sec) of any NMs produced not including English translation.

ACTION 3/5: UK to define the freedom for using UKHO symbol sets.

4. Relationship with HSSC

4.1. Notes from HSSC8 (Chair)

Docs: NCWG3-04.1A NCWG report to HSSC8 (HSSC8-05.6A)
Presentation

Chair reviewed the HSSC8 Actions (as listed on IHO website) which are relevant to NCWG. These have been included in the agenda as appropriate. On HSSC8/51, Jackie Barone (US-NGA) agreed to be the NCWG initial point of contact for the Undersea Feature Names project team.

Yves Guillam took the opportunity to review the list of decisions of the 1st Session of the IHO Assembly (IHO-A1) available on the website, for the information of the meeting. On decision 8, he urged WG members to be prepared to contribute, to avoid as far as possible outsourcing work to industry which could loosen control of basic standards by IHO Member States. On decision 13, he advised that the text used in paper NCWG3-08.3A should be adjusted to take account of changes made by the IHO-A1.

4.2. Report from S-100WG: *Presentation (Chair)*

Docs: NCWG3-04.2A

Chair briefed the meeting on the activities of the S-100WG, as stated in the paper. He noted that the management of the S-100 GI registry is now the responsibility of Jeff Wootton (IHO Secretariat - TSSO), former chair of NCWG. On the 'outstanding issues for NCWG', he commented that this refers to the 'slimmed down' list of symbols (NCWG2 Action 31), and would now be taken forward by the volunteer group consisting of DE, FI, IT, TR, US-NGA, US-NOAA – see earlier action NCWG3/3.

The meeting noted the report. There were no issues to be reported back to S-100WG

4.3. Report from ENCWG: *Presentation (Chair)*

Docs: NCWG3-04.1A

Chair briefed the meeting on the activities of the ENCWG, as stated in the paper. He noted that the work of the former Data Protection Scheme WG had been shared between S-100WG and ENCWG. He commented that, as existing Vice Chair, he would not be standing for reappointment at the next meeting of the ENCWG, now he had taken on the Chair of NCWG (as approved at Agenda 15).

The meeting noted the report and supported the recommendation for close liaison.

4.4. Report from NIPWG *Presentation (IHO(Sec))*

Yves Guillam presented the report of the NIPWG. He advised that HSSC had tasked the NIPWG to focus on the S-122 (Maritime Protected Areas) and S-123 (Radio Services). NCWG may be asked to contribute; this would be discussed further at the Visualization workshop next week, where Colby Harmon and Mikko Hovi would represent NCWG. Carlo Marchi (IT) will also attend and advised the need to establish a draft protocol for liaison between WGs.

Yves Guillam further noted that NIPWG are studying existing associated IHO Resolutions in M-3 with a view to cleansing or absorbing them into IHO Standards. He suggested that NCWG should do the same. Secretary reminded the meeting that this had been done thoroughly during the revision of S-4

Part B, but agreed that it might now be appropriate to check and see if any further resolutions could be cancelled by past or future incorporation into S-4.

ACTION 3/6: Secretary, Chair and IHO(Sec) to review all IHO Resolutions associated with NCWG activities with a view to cancelling them, or absorbing them into the appropriate standard.

4.5. Report from HDWG (Chair)

Yves Guillam presented the report of the HDWG. He noted there is now a plan for a meeting of the WG 25-26 July 2017. Some way forward has been suggested for discussion, although it is unclear whether this will proceed to a satisfactory outcome for outstanding actions, e.g. the issues of incorrect definitions of Elevation and Height, the inadequate definition of ED and changes to definitions of seaweed, seagrass and kelp. The meeting noted the report. NCWG1/7 (definition of ED) was transferred to Colby Harmon (see 3 above), Chair took responsibility to take NCWG2/24 (definition of Seagrass) forward and to monitor HDWG progress on NCWG2/4 (definitions of Elevation/Height/Altitude).

4.6. Report from DQWG (IHO(Sec))

Yves Guillam presented the report of the DQWG as delivered to HSSC8, with some updates provided. He noted that this will probably be the last meeting of the DQWG and that some remaining actions may be passed to other WGs, including NCWG. The meeting was asked whether it could accept some of these actions and it agreed this is possible depending on whether it is appropriate to this WG. There was some discussion about the draft S-67 (Mariner's Guide to Accuracy of ENC's), which had been prepared by AU, especially whether this is an appropriate document for the IHO to prepare at all, rather than being included in national maritime advisory publications. It may depend on whether the IMO would require it as a SOLAS document.

The meeting noted the report, without any requirement for immediate decisions or actions.

ACTION 3/7: On request from Chair DQWG, prior to HSSC9, Chair NCWG to consider on a case by case basis, the work items from DQWG Work Plan that might be transferred to NCWG.

5. Terms of Reference

5.1. Changes consequent to HSSC8 and 1st IHO Assembly (Chair)

Docs: NCWG3-05.1A NCWG Terms of Reference

The minor changes proposed in the paper were all accepted and should be offered to HSSC9 for approval.

ACTION 3.8: Chair to include changes to NCWG TOR in report to HSSC9.

6. NCWG procedures

6.1. Changes consequent to HSSC Chair group meeting (Chair)

Docs: NCWG3-06.1A Draft Revised Procedures

After some considerable debate, the meeting accepted the principle of establishing an 'S-4 Bulletin' (although not necessarily termed bulletin, could be 'digest' or 'news'); to be considered further by correspondence. All other changes in the 'procedures' paper were approved and an additional paragraph should be added about issuing an 'invitation to meeting' letter about 6 months in advance of the NCWG meetings, to allow time for budget and visa approvals and also invite suggestions for subject matter.

ACTION 3.9: Chair/Secretary to draft NCWG Letter outlining the options of the purpose and how to establish such a 'bulletin' system for further consideration by the whole WG.

ACTION 3.10: Chair/Secretary to draft NCWG Letter adding a paragraph to procedures about issuing an 'invitation to meeting' letter about 6 months in advance of the NCWG meetings, to allow time for

budget and visa approvals. Also, to invite suggestions for subject matter.

ACTION 3.11: IHO(Sec) to upload revised NCWG procedures to IHO website.

7. NCWG work plan

7.1. Summary of progress, items completed (Secretary)

Docs: NCWG3-07.1A Work Plan updated from HSSC8

Secretary briefed the meeting on progress with NCWG tasks listed in the Work Plan, as updated following HSSC8. 11 items had been reported completed to HSSC8 and can now be removed from the plan. A further 7 items have been completed by publication of S-4 4.7.0 and S-11A 3.0.0 and will be reported as completed to HSSC9. 5 new items have been added by HSSC8 and are subjects of agenda items in NCWG3.

7.2. Consideration of the future of paper charts (Work item A16) (Chair)

Docs: None

Chair proposed three questions:

- Is there a need for a separate correspondence group?
- Who will coordinate?
- What is the scope and objective?

It was decided that there should be a small drafting group, chosen from among the NCWG members. This would be led by Colby Harmon and the new Vice Chair (Jackie Barone, as agreed at item 15). This group produced, during the meeting period, a draft ‘table of contents’.

ACTION 3/12: Colby Harmon to circulate draft ‘table of contents’ of the report into the future of paper charts list to WG members for information.

ACTION3/13: WG members to feedback on table of contents to Colby Harmon by 20 July 2017.

ACTION 3/14: Colby Harmon and Jackie Barone to assign areas of work to volunteers (Chair, CA, IT, UK, US-NGA, US-NOAA, IHO(Sec), ESRI)

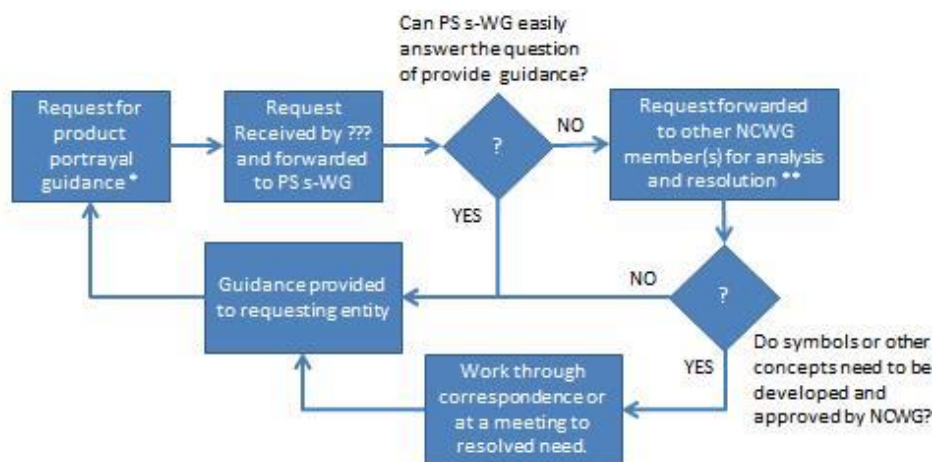
7.3. Protocol for considering portrayal requirements (Work item A26) (Chair)

Docs: None

Chair proposed an option for a protocol: Small subWG to act as point of contact for any WG asking for assistance, with a mandate to deal directly with simple to resolve issues. More complex issues to be escalated to [agreed experts within the WG / whole WG]. This can be visualized as:

There will be a need for a simple template for enquiring groups to format requests to NCWG portrayal support subWG. The members of the subWG will prepare something to discuss at the NIPWG Visualization workshop for next week. Jackie Barone suggested it

NCWG Portrayal Support Sub-WG



* Request could come from an S-100 product specification developer, product producer, or Original Equipment Manufacturer
 ** Individuals responsible for different products could be identified ahead of time

might be useful to have designated contacts within the groups most likely to need our services.

ACTION 3/15: NCWG reps to NIPWG 'Visualization' workshop to report back to NCWG on agreed protocol for seeking advice from NCWG.

7.4. Future of S-4 (Work item A28) (Chair)

Docs: None

This item was deferred until further progress is made with item 7.2.

7.5. Quality assurance check list for INT Chart coordinators (Work item B4) (IHO(Sec))

Docs: IRCC9-03C Revised management, review and monitoring of INT charts

The meeting endorsed the recommendation of the paper to incorporate the new procedure in S-11 Part A and submit it by correspondence to HSSC for endorsement of Ed. 3.1.0, prior to the IHO Council.

7.6. Liaison with IHO subsidiary bodies (Work item H1) (Chair)

Docs: None

NCWG has always liaised with HSSC and the Chairs of its subordinate WGs, who are copied into all NCWG letters and conference papers. Other bodies should be liaised with for specific relevant topics.

7.7. Document on 'equivalent' T&P NMs (Work item H2) (Chair)

Docs: None

This was a joint action required of ENCWG and NCWG. The paper submitted by Chair ENCWG did not cover all matters that NCWG considered required for raising awareness in the IHO Community about T&P NMs

ACTION 3/16: Chair to augment draft T&P document and circulate to WG members for review

7.8. Visualizing uncertainty of bathymetric data in S-101 (Work item H2) (Chair)

Docs: None

Duplicate item. Covered at Agenda item 8.4.

8. Chart content:

8.1. Coloured flood lighting on multicoloured charts (UK)

Docs: NCWG3-08.1A Coloured flood lighting on multicoloured charts

Proposal was accepted.

ACTION 3/17: Secretary to include clarification on option to use a range of colours for floodlighting symbol in next edition of S-4.

8.2. Small craft anchorage: would it benefit from a dedicated symbol? (UK)

Docs: NCWG3-08.2A Symbol for small craft anchorage/anchor berth

There was some uncertainty about the pros and cons of this proposal. Also, some discussion about the difference between anchorages and moorings.

ACTION 3/18: Secretary to draft letter explaining the proposals to extend the use of the yacht/small craft symbol in more detail and allow WG members to consider and vote as appropriate.

8.3. Charting of submarine cables (Work item A29) (ICPC)

Docs: NCWG3-08.3A ICPC proposal to NCWG for adapting S-4 charting specification (B443 & C408) for submarine cables taking into account deep sea mining

ICPC were not in attendance and had not sent a promised presentation, so Chair presented the paper. He noted that the paper had not been updated for the submission to IHO-A1 or the decisions of IHO-A1 (Decision 13 in [A.1/MISC/03Rev1](#)). In the absence of ICPC representative, a full discussion was not possible, although it was noted that getting the necessary data is a massive challenge, which it is hoped that ICPC may be able to contribute to.

ACTION 3/19: Secretary to check that S-4 has nothing contradictory on cables to Res. 4/1967 (as amended by IHO-A1).

8.4. Data Quality Indicators for bathymetric data on ECDIS chart display (DE)

Docs: *NCWG3-08.4A* *Data Quality Indicators for bathymetric data on ECDIS chart display*

Chair presented the paper, via a PPT presentation which is available on the website.

Chair stated that HSSC has already accepted the concept of the 5 levels proposed by DQWG. After considerable discussion, it was agreed that the 'grid' concept is better than the current CATZOC 'stars'. It represents a viable starting point for further development, depending on progress in agreeing the data model by S-100WG. Concerns were expressed about the density of poorer quality (i.e. denser) grid obscuring detail, some commenting only usable for planning purposes.

AU (Sanchez) emailed some points which are useful to take into consideration during any further development:

'In regards to the proposal I support the outcomes of the research project with some comments:

- I agree with the idea of being able to set up a "corridor" for the display of the DQI (Data Quality Indicator) pattern during route planning.
- I agree with the possibility of displaying the DQI pattern in a circle which moves with the ship during route monitoring but:
 - Instead of showing all the different patterns (ZOC categories) inside the "guard zone" I'd prefer the mariner being able to set up a CATZOC value (e.g. B) and only see areas of lower ZOC. This approach reduces clutter as the guard zone around the ship won't show any pattern unless it gets in contact with an M_QUAL which breaches the settings (e.g. C or D). If the mariner wants to know more about the M_QUAL it can do pick report and, for example, clarify if it's a ZOC C or ZOC D area.
 - Instead of the "mouse hover" option I'd prefer a "full screen" option which will display any M_QUAL breaching the CATZOC settings previously set up by the mariner. A full screen option will provide a better picture of the surroundings at a glance and allow the mariner to deviate to unplanned areas if an emergency occurs.
 - In regards to the pattern options, I think that there should be 3:
 - ZOC = Unassessed - A pattern made of U letters (displays always irrespective of the settings)
 - ZOC worse than settings - Loose grid pattern
 - ZOC better than settings - No pattern at all
 - In the future development of S-100 compatible ECDIS, it would be useful to include an "ON/OFF" button called "DQI" which, when activated, brings up a settings window where mariners could set up the radius of the "guard zone" and the ZOC value they consider as "safe" and will control the DQI pattern display. Another two buttons should also exist: one "F" for full screen display of M_QUALs and other "R" (radius) to activate the "guard zone" display only. Both buttons would use the settings in force.'

ACTION 3/20: Chair to report back to DE and HSSC that the concept of gridded data quality proposed by DE was discussed and considered viable as a basis for further development.

8.5. Contour lines discrepancies in ENCs (IHO(Sec))

Docs: NCWG3-08.5A Contour lines discrepancies between ENC's of different usage bands covering the same area

Yves Guillam explained the paper, which had resulted from a complaint from a mariner. It was stated that this is a consequence of compiling ENC from old paper charts. Chair also commented that the problem is not only visual, but also results in audible alarms being generated unnecessarily. It was reminded that “vertical” consistency had to be ensured as far as possible. However, the meeting considered that as far as S-4 is concerned, B-100.5 (compiling larger scale first) gives the correct guidance.

ACTION 3/21: IHO(Sec) to check the UOC concerning contour lines and advise ENCWG if there is a need for some revision.

8.6. Symbol for rocks which do not cover (IT)

Docs: NCWG3-08.6A Rocks which do not cover: do we need a new point symbol?

Manuela Milli (IT) presented the Italian ‘A’ paper, proposing a new symbol for an above water rock or small islet (mainly to have a proper method of describing the feature for NM purposes and to have some suitable symbol to derive from ENC point land feature).

Colby Harmon presented the US ‘B’ paper counter proposal, agreeing the problem but recommending a different symbol, comprising a small, land tint filled, oval.

After discussing various options, the meeting agreed that there should be a paper chart equivalent for the S-57 ‘point’ land feature, and that it should be a small land tint filled circle of coastline thickness.

ACTION 3/22: Secretary to draft amendments to S-4 for islet/above water rock symbol and circulate to WG members for review.

8.7. Depiction of the swinging circle around anchor berth (IT)

Docs: NCWG3-08.7A Depiction of the swinging circle around anchor berth

Manuela Milli presented the paper. IT proposed 4 options for depicting anchor berth swinging circles where the actual anchor berth falls off limits. 3 further options were considered during the meeting. The meeting concluded that option 2 (to show the swinging circle limits alone) is best (simplest and retains vertical consistency) but that where it is not obvious what the feature is, the anchor berth symbol (with or without designation) could be shown set into the limit.

ACTION 3/23: Secretary to draft clarification to S-4 B-431.2 to provide guidance on the depiction of anchor berth swinging circles and circulate to WG for review.

8.8. Improvement of ENC's display on ECDIS (Chair – for FR)

Docs: NCWG3-08.8A Improvement of ENC's display on ECDIS

Chair presented a PPT presentation elaborating on the paper on behalf of FR, which had already been presented to the S-100 and ENC WGs. He stated that these WGs have already set up a cross-WG subWG and will invite NCWG to join. Kasufumi Matsumoto (JP) volunteered to join the group.

ACTION 3/24: All to consider joining the ‘Improvement of ECDIS display’ sub-group and advise Chair.

ACTION 3/25: Chair to inform FR coordinator of ‘Improvement of ECDIS display’ group of participants from NCWG.

8.9. Vertical Clearances on Bridges (FI)

Docs: NCWG3-08.9A Vertical Clearances on Bridges

Chair presented the paper on behalf of Finland. Andreas Andersson explained that SE had already had to deal with a similar situation and had included a detailed explanation of vertical clearance heights in annual NMs; FI were considering including similar in INT1. Secretary suggested a brief note under the title, as some MS use to explain about vertical clearances being referred to HAT,

stating that 'vertical clearances include a safety margin authorised by ... [name of authority]' might be useful, and reduce the risk of mariners applying the safety margin twice.

The paper was noted, no actions required.

8.10. Larger scale ENC data limits on paper charts (Chair – for AU)

Docs: NCWG3-08.10A Larger scale ENC data limits on Paper Charts

Chair presented the paper on behalf of AU. SE and CA stated they had similar examples. Yves Guillam expressed concerns about the second paragraph of the note, with which the meeting agreed. The first half of the note seemed to be stating the obvious and is unnecessary. The meeting decided that this is a legitimate application of 'references to other charts' (B-254), preferring that the limit should be charted as any other chart limit, with the reference simply to 'ENC' (the cell designation is unnecessary, adds extra clutter, especially if there are actually a series of cells required).

ACTION 3/26: Secretary to add clarification to S-4 B-254 that 'other charts' may include limits of larger scale ENC coverage and circulate to WG members for review.

8.11. Aids to Navigation Changes in ENC and Paper Chart (Chair – for DE)

Docs: NCWG3-08.11A Aids to Navigation Changes in ENC and Paper Charts

The very late paper from DE was presented by Chair. It was suggested that in many cases it would be better to use a legend 'buoyed channel' on the paper chart if it is not intended to maintain positions by NM. However, it was decided that the example paper chart note about buoy movements met the guidance about consistency of products in S-4 B-104, although a suggestion was made that it could have 'see ENC' added.

The paper was discussed and noted, no actions required.

9. S-4

9.1. Changes consequent on revision of Res. 3/1919 (Work item A30) (Chair)

Docs: NCWG3-09.1A Revised IHO Resolution 3/1919: impact on S-4

Secretary presented the paper. Yves Guillam advised that there may need to be amendments to INT1 H20. The proposed changes to S-4 were accepted by the meeting.

ACTION 3/27: Secretary to prepare revision consequent on Res 3/1919 (2017) for next edition of S-4 for HSSC10 and note possible changes to H20 for INT1 subWG to consider.

9.2. Should we delete or update reference to LORAN (B-480.2)? (Secretary)

Docs: NCWG3-09.2A Should we delete reference to Loran from S-4?

Secretary presented the paper. The meeting approved the proposal.

ACTION 3/28: Secretary to prepare deletion of 'LORAN' section for next edition of S-4 for HSSC10

9.3. Question about magnetic annual rate of change (Secretary, for Estonia)

Docs: NCWG3-09.3A Units for quoting annual rate of change for magnetic variation

Secretary presented the paper. The meeting approved the proposal. Ben Timmerman (NL) questioned which way the arrow head on the magnetic arrow should face. Mixed views were expressed by meeting participants.

ACTION 3/29: Secretary to draft change to S-4 to allow use of decimals of degrees for magnetic variation and circulate to WG members for review.

ACTION 3/30: Secretary to research whether there is any guidance on position of magnetic arrow related to direction of magnetic variation or variation change and draft appropriate guidance for S-4.

9.4. Exchange of reproduction material: recommendations about S-57 format (IT)

Docs: NCWG3-09.4A Exchange of reproduction material: recommendations about S-57 format

Manuela Milli presented the paper. Ben Timmerman pointed out that S-57 format is not ideal for

adoptions, as cartographic elements included on the paper chart were lost. Nick Rodwell agreed, pointing out that colour separate TIFs were a better way to ensure faithful reproduction of adopted paper charts. This was generally agreed, although S-57 is a useful format for data transfer.

Yves Guillam suggested it would be useful to have some examples of bilateral arrangements on the IHO website.

ACTION 3/31: Secretary to draft amendments to S-4 Part A.500 for digital reproformat (vector and raster) and circulate to WG members for review.

10. Other NCWG publications

10.1. S-11 Part A (IHO(Sec))

Docs: None

Yves Guillam reported that edition 3.0.0. of S-11 Part A is now approved; a CL will be issued shortly. The paper referred to at Agenda 7.5, as approved by the meeting, would now be submitted to IRCC, and then onward to HSSC and the Council and finally MS for approval, before being issued as edition 3.1.0.

11. INT 1 / 2 / 3

11.1. Report from Secretary of INT1 subWG (Secretary)

Docs: NCWG3-11.1A *Report of NCWG INT1 subWG*

Secretary presented the paper. The meeting:

- Noted the report
- Approved the continuing existence of the INT1subWG
- Approved the proposed amendment to TOR (deletion of 5f)
- Approved the addition 10c to the Procedures.
- Approved the deletion of the Telegraphic buoy (from INT1 Q43 and consequent action in S-4)
- Advised the INT1 subWG to decide themselves on whether to reinstate the Emergency Wreck Marking Buoy at Q63.

Colby Harmon commented on the importance of the work of the subWG, and noted that the work was beneficial to all INT1 producers, not just the three official INT1s. US-NOAA, NO and NL all requested to receive updated copies of the list of outstanding changes to INT1. Secretary suggested that maybe it should be held on the IHO website for the benefit of all MS. Federico Yanguas Guerrero (ES member of INT1subWG) commended Andrew Heath-Coleman for his contribution in coordinating the subWG.

ACTION 3/32: Secretary to amend INT1subWG TOR and procedures as agreed.

ACTION 3/33: Secretary to investigate posting a list of anticipated and approved changes to INT1 on website.

11.2. Development of new section V on data quality (Work item E9) (Secretary, for AU)

Docs: NCWG3-11.2A *Development of new section V on data quality (Work item E9)-
History Brief*

Secretary presented the paper, explaining the background to the planned Section V. FI indicated that it has a section explaining ZOC diagrams, US-NOAA and IT are planning something similar. UK offered to scope the requirement and if possible produce a preliminary draft section V.

ACTION 3/34: UK to prepare a preliminary draft of INT1 Section V.

12. Lessons learned from Marine Incidents

No items were received under this heading.

13. Review of Actions and Work Plan

13.1. Actions

The draft actions were reviewed and agreed by the meeting.

13.2. New items for Work Plan

The only new item for the work plan identified was rewriting S-4 A.500 to cover digital reprostat.

13.3. Priorities

To be taken out of meeting by Chair and Secretary

13.4. Timescales for tasks

To be taken out of meeting by Chair and Secretary

14. INF papers, reports and Any Other Business,

14.1. Changing the format of the NCWG Membership List (Secretary)

Docs: NCWG3-14.1A NCWG Membership list

Secretary presented the paper, with additional comments and explanations from IHO(Sec). There was little support for splitting the members into two groups, but it was agreed that it would be useful to identify those members who are active in subWGs, project teams, etc.

ACTION 3/35: Secretary to prepare revised membership list with membership of subWGs indicated. Also, to contact non-active members to enquire whether still involved.

14.2. 'Cool cartography' presentation (ESRI)

This item was cancelled.

14.3. INF1: Web-based charting (ESRI)

Trish Sheatsley (ESRI) presented the developing ESRI 'products on demand' paper chart generator (from ENC data). This is not a complete 'INT1' paper chart generator, but it is planned to add tools in the future which would enable some compiler interventions. The plea from ESRI is for NCWG to work towards accepting much simplified paper charts, to allow more automation in generation. It was decided that the demonstration would be beneficial for HSSC to see.

ACTION 3/36: IHO(Sec) or Chair to consider demonstrating the ESRI 'products on demand' (maritimdemo.esri.com/pod) paper chart generator to HSSC9, as part of report on future of paper chart

Any Other Business:

14.4. Yves Guillam reminded the meeting that the IHO seal has changed (see CL18/2017). This has an impact on INT charts.

14.5. The template for NCWG Explanatory Notes (ENs) should have 'Possible Impact on ENC' added. Secretary suggested that there is a case for adding 'Possible Impact on paper charts' to the ENs or submission papers of ENCWG and S-100-WG as well.

ACTION 3/37: Secretary to update NCWG EN template to include 'Possible impact on ENC'

ACTION 3/38: IHO(Sec) to consider whether ENs or submission papers for other WGs should include 'Possible impact on S-4' as well.

14.6. A message from Jeff Wootton (former Chair) sending Best Regards was conveyed. (Earlier in the meeting, a similar message was conveyed from Peter Jones, another former Chair).

14.7. Secretary enquired whether corner coordinates on charts are still useful: the answer was 'yes'.

14.8. Secretary enquired whether it is useful to identify Lidar surveys on source diagrams: the answer was 'no'.

15. Election of NCWG officers (IHO(Sec))

Docs: NCWG3-15.1A Election of NCWG Officers

Yves Guillam conducted an election of officers:

- Mikko Hovi was elected as Chair, unopposed.
- A secret ballot was conducted for Vice Chair, as three candidates had been nominated: Manuela Mille, Nick Rodwell and Jackie Barone. Jackie Barone was elected as Vice Chair.

ACTION 3/39: New NCWG officers were asked to supply photo and short biography for the NCWG sections of the IHO website.

ACTION 3/40: All to consider whether their organization would supply a future secretary for NCWG, by end 2017.

16. Date, duration and venue of next meeting

The meeting agreed to continue with 3 days (+ 1 day contingency) for approximately annual meetings.

The meeting had to be moved from May, as this would now be when HSSC would meet. It was decided to meet sometime in a window September 2018 to February 2019. (Host to choose actual dates). No offers to host have yet been received; IHO(Sec) in Monaco remains a back-up.

ACTION 3/41: All to consider hosting NCWG4 in the period September 2018 to February 2019. (Back up plan IHO Secretariat in Monaco from November 2018).

The Chairman thanked everyone for their attendance and input and closed the meeting at 1650 on Thursday 18 May.

NCWG3-02Arev6

3rd NCWG MEETING
ESRI HQ, Redlands, California, USA 16-19 May 2017

Agenda

Host to meet with Chair and Secretary on Monday at 1300 (in front of main HQ building at end of New York Street).

All participants please assemble at 0915 for 0930 start (Tuesday) and 0845 for 0900 start (other days).

Close by approximately 1600 (1500 on Thursday). Friday contingency.

1. Welcome, Introductions and Administrative Arrangements

Docs: NCWG3-01A List of Documents (on website)
NCWG3-01B List of Registered Meeting Participants
NCWG3-01C List of NCWG Members

2. Approval of Agenda

Docs: NCWG3-02Arev6 Agenda

3. Status of Actions from NCWG2

Docs: NCWG3-03A Status of NCWG2 Actions

4. Relationship with HSSC and HSSC Working Groups

4.1. Notes from HSSC8 (Chair)

Docs: NCWG3-04.1A NCWG report to HSSC8 (HSSC8-05.5A)
Presentation
NCWG3-04.1B Report from HSSC8 of interest to NCWG

4.2. Report from S-100WG (Chair)

Docs: NCWG3-04.2A Report on S-100WG Activities

4.3. Report from ENCWG (Chair)

Docs: NCWG3-04.3A Report on ENCWG Activities

4.4. Report from NIPWG (IHO(Sec))

4.5. Report from HDWG (IHO(Sec))

4.6. Report from DQWG (IHO(Sec))

5. Terms of Reference

5.1. Changes consequent to HSSC8 and 1st IHO Assembly (Chair)

Docs: NCWG3-05.1A NCWG Terms of Reference

6. NCWG procedures

6.1. Changes consequent to HSSC Chair group meeting (Chair)

Docs: NCWG3-06.1A Draft Revised Procedures

7. NCWG work plan

7.1. Summary of progress, items completed (Secretary)

Docs: NCWG3-07.1A Work Plan updated from HSSC8

7.2. Consideration of the future of paper charts (Work item A16) (Chair)

7.3. Protocol for considering portrayal requirements (Work item A26) (Chair)

7.4. Future of S-4 (Work item A28) (Chair)

7.5. Quality assurance check list for INT Chart coordinators (Work item B4) (IHO(Sec))

Docs: NCWG3-07.5A Copy of IRCC9-03C Revised management, Review and Monitoring of new INT Charts

7.6. Liaison with IHO subsidiary bodies (Work item H1) **(Chair)**

7.7. Document on 'equivalent' T&P NMs (Work item H2) **(Chair)**

Docs: NCWG3-07.7A Promulgating T&P NM information using IHO S-57C

7.8. Visualizing uncertainty of bathymetric data in S101 (Work item H2) **(Chair)**
(See also Agenda item 8.4)

8. Chart content

8.1. Coloured flood lighting on multicoloured charts **(UK)**

Docs: NCWG3-08.1A Coloured flood lighting on multicoloured charts

8.2. Small craft anchorage: would it benefit from a dedicated symbol? **(UK)**

Docs: NCWG3-08.2A Symbol for small craft anchorage/anchor berth

8.3. Charting of submarine cables (Work item A29) **(ICPC)**

Docs: NCWG3-08.3A Action HSSC8/68 ICPC Proposal to NCWG for adapting S-4 Charting Specification (B443 & C408) for Submarine Cables taking into account Deep Sea Mining. (NB: Annexes B and C separate PDFs)

8.4. Data Quality Indicators for bathymetric data on ECDIS chart display **(Chair – for DE)**

Docs: NCWG3-08.4A Data Quality Indicators for bathymetric data on ECDIS chart display

8.5. Contour lines discrepancies in ENC's **(IHO(Sec))**

Docs: NCWG3-08.5A Contour lines discrepancies between ENC's of different usage bands covering the same area

8.6. Symbol for rocks which do not cover **(IT)**

Docs: NCWG3-08.6A Rocks which do not cover: do we need a new point symbol?

NCWG3-08.6B Rocks, which do not cover: US minimum-size symbol for islets

8.7. Depiction of the swinging circle around anchor berth **(IT)**

Docs: NCWG3-08.7A Depiction of the swinging circle around anchor berth

8.8. Improvement of ENC's display on ECDIS **(Chair – for FR)**

Docs: NCWG3-08.8A Improvement of ENC's display on ECDIS

8.9. Vertical Clearances on Bridges **(FI)**

Docs: NCWG3-08.9A Vertical Clearances on Bridges

8.10. Larger scale ENC data limits on paper charts **(Chair – for AU)**

Docs: NCWG3-08.10A Larger scale ENC data limits on Paper Charts

8.11. Aids to Navigation Changes in ENC and Paper Chart **(Chair – for DE)**

Docs: NCWG3-08.11A Aids to Navigation Changes in ENC and Paper Charts

9. S-4

9.1. Changes consequent on revision of Res. 3/1919 (Work item A30) **(Chair)**

Docs: NCWG3-09.1A Revised IHO Resolution 3/1919: impact on S-4

9.2. Should we delete or update reference to LORAN (B-480.2)? **(Secretary)**

Docs: NCWG3-09.2A Should we delete reference to Loran from S-4?

9.3. Question about magnetic annual rate of change **(Secretary, for Estonia)**

Docs: NCWG3-09.3A Units for quoting annual rate of change for magnetic variation

9.4. Exchange of reproduction material: recommendations about S-57 format **(IT)**

Docs: NCWG3-09.4A Exchange of reproduction material: recommendations about S-57 format

10. Other NCWG publications

10.1. S-11 Part A **(IHO(Sec))**

11. INT 1 / 2 / 3

11.1. Report from Secretary of INT1 subWG **(Secretary)**

Docs: NCWG3-11.1A Report of NCWG INT1 subWG

11.2. Development of new section V on data quality (Work item E9) (Chair for AU)

Docs: NCWG3-11.2A Section V History Brief

12. Lessons learned from Marine Incidents

13. Review of Actions and Work Plan

13.1. Actions

13.2. New items for Work Plan

13.3. Priorities

13.4. Timescales for tasks

14. Any Other Business including INF papers and MS reports

14.1. Changing the format of the NCWG Membership List

Docs: NCWG3-14.1A NCWG Membership list

14.2. 'Cool cartography' presentation (CANCELLED) (ESRI)

14.3. INF1: Paper Chart Automation (ESRI)

15. Election of NCWG officers (IHO(Sec))

Docs: NCWG3-15.1A Election of NCWG Officers

16. Date, duration and venue of next meeting

Note: Members considering to host NCWG4 and NCWG5 should note that due to IHO Council meetings, that will be held annually in October, HSSC meetings will move to May starting 2018. This means that the future NCWG meetings will be held between September and January.

List of Conference documents

Document No	Posted On	Document Title
	23 January 2017 16 February 2017	NCWG Letter 01/2017 announcing NCWG-3, including logistic information Additional Logistics Information Registration Form: On-line registration (preferred option)
NCWG3-01A		List of Documents (this html page)
NCWG3-01B	11 May	List of Meeting Participants The List of Participants is kept up-to-date and available on the IHO on-line registration system
NCWG3-01C	--	List of NCWG Members
NCWG3-02A Rev6	11 May	Agenda and Timetable (.doc , .pdf)
NCWG3-03A	21 March	Status of Actions from NCWG2 (.doc)
NCWG3-04.1A	--	NCWG Report to HSSC8 Presentation
NCWG3-04.1B	12 May	Matters from HSSC8 and IHO-A1 of interest to NCWG - List of Decisions & Actions from HSSC-8 (.doc) - List of Decisions from A-1 (.pdf)
NCWG3-04.2A	1 May	Report from S-100WG - Presentation
NCWG-04.3A	9 May	Report from ENCWG - Presentation
NCWG3-04.4A	29 May	Report from NIPWG - Presentation
NCWG3-04.5A	29 May	Report from HDWG - Presentation
NCWG3-04.6A	29 May	Report from DQWG - Presentation
NCWG3-05.1A	14 March	NCWG Terms of Reference
NCWG3-06.1A	8 March	NCWG Procedures

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NCWG3-07.1A	21 March	NCWG Work Plan (updated from HSSC8)
NCWG3-07.5A	9 May	Monitoring of INT Charts (Doc. IRCC9-03C)
NCWG3-07.7A	9 May	Promulgating T&P NM information using IHO S-57
NCWG3-08.1A	21 March	Coloured flood lighting on multicoloured charts
NCWG3-08.2A	21 March	Symbol for small craft anchorage/anchor berth
NCWG3-08.3A	18 April	Action HSSC8/68 ICPC's Proposal for adapting S-4 charting specification (B-443 & C-408) for submarine cables taking into account deep sea mining (.doc , Annex B , Annex C)
NCWG3-08.4A	15 March	Data Quality Indicators for bathymetric data on ECDIS chart display
NCWG3-08.5A	14 March	Contour lines discrepancies between ENC's of different usage bands covering the same area
NCWG3-08.6A	27 March	Rocks which do not cover: do we need a new point symbol?
NCWG3-08.6B	18 April	Rocks, which do not cover: US minimum-size symbol for islets
NCWG3-08.7A	27 March	Depiction of the swinging circle around anchor berth
NCWG3-08.8A	6 April	Improvement of ENC's display on ECDIS
NCWG3-08.9A	6 April	Vertical Clearances on Bridges
NCWG3-08.10A	1 May	Larger scale ENC data limits on Paper Charts
NCWG3-08.11A	9 May	Aids to Navigation Changes in ENC and Paper Chart
NCWG3-09.1A	18 April	Revised IHO Resolution 3/1919: impact on S-4
NCWG3-09.2A	21 March	Should we delete reference to Loran from S-4?
NCWG3-09.3A	21 March	Units for quoting annual rate of change for magnetic variation
NCWG3-09.4A	27 March	Exchange of reproduction material: recommendations about S-57 format

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NCWG3-11.1A	21 March	Report of NCWG INT1 subWG
NCWG3-11.2A	9 May	Development of new section V on data quality (Work item E9) - History Brief
NCWG3-14.1A	17 March	NCWG Membership List
NCWG3-14.3 INF1	20 April	Paper Chart Automation
NCWG3-15.1A Rev1	12 May	Election of NCWG Officers

List of Participants in NCWG3

Country	Organization	Participant	E-mail
Brazil	Directorate of Hydrography and Navigation	Estela Dierka	estela.dierka@marinha.mil.br
Canada	Canadian Hydrographic Service	Daniel Brousseau (Head)	daniel.brousseau@dfo-mpo.gc.ca
Denmark	Danish Geodata Agency - Geodatastyrelsen (Gst)	Lasse Andresen Thomas Christensen	landr@gst.dk thchr@gst.dk
Finland	Finnish Transport Agency Hydrographic Office	Mikko Hovi (Chair)	mikko.hovi@liikennevirasto.fi
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Netherlands	Hydrographic Service - Royal Netherlands Navy	Ben Timmerman (Head)	B.Timmerman@mindef.nl
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Sweden	Swedish Maritime Administration	Andreas Andersson	andreas.andersson@sjofartsverket.se
Turkey	Seyir Hidrografi ve Osinografi Dairesi Baskanligi	Esref Gunsay (Head)	egunsay@shodb.gov.tr
United Kingdom of Great Britain and Northern Ireland	United Kingdom Hydrographic Office	Nick Rodwell Andrew Heath-Coleman (Secretary)	nick.rodwell@UKHO.gov.uk andrew.coleman@UKHO.gov.uk
United States of America	Office of Coast Survey / National Ocean Service (OCS/NOS)	Colby Harmon	colby.harmon@noaa.gov
	National Geospatial-Intelligence Agency Department of Defense (NGA)	Jacqueline Barone	jacqueline.barone@nga.mil
Others			
	Organization	Participant	E-mail

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	International Hydrographic Organization	Yves Guillam	adcs@iho.int
	ESRI	Patricia Sheatsley	psheatsley@esri.com

NCWG3 Actions
3rd NCWG MEETING
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NCWG3 Actions

RETAINED ACTIONS from CSPCWG11/NCWG1

No	NCWG1 Agenda item	NCWG1 Action	Delegate	Status
7	4.4	Colby Harmon to progress the action about a revised definition for ED (in place of WG10 Action 25)	Colby Harmon	

RETAINED NCWG2 ACTIONS

No	NCWG2 Agenda item	NCWG2 Action	Delegate	Status
20	8.6	Chair to discuss DQ options with Ron Furness (ICA)	Chair	
24	8.9	Chair to propose changes to definitions for seagrass and seaweed in S-32 to HDWG (and consider whether any related definitions, such as kelp, need adjusting). Note from NCWG3: Additionally, to monitor HDWG's processing of NCWG2/4 on the agreed revised definitions of height, elevation and altitude.	Chair	

No	NCWG3 Agenda item	NCWG3 Action	Delegate	Status
1.	3	Secretary to produce draft report of NCWG3 by end of June 2017, for participants to approve.	Secretary	
2.	3	Secretary to send letter advising WG members about venue and date of next meeting 6 months ahead, ask for agenda items and offer for Chair to intervene on budgetary requirements if necessary.	Secretary	
3.	3	Chair to share list of possibly required symbols for S-101 among volunteers (IT, TR, DE, FI, US-NOAA, US-NGA) and to check latest S101 data quality model is included in the list.	Chair	
4.	3	WG members to advise IHO Sec of any NMs produced not including English translation.	All	

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5.	3	UK to define the freedom for using UKHO symbol sets.	UK	
6.	4.4	Secretary, Chair and IHO (Sec) to review all IHO Resolutions associated with NCWG activities with a view to cancelling them, or absorbing them into the appropriate standard.	Secretary, Chair, IHO(Sec)	
7.	4.4	On request from Chair DQWG prior to HSSC9, Chair NCWG to consider on a case by case basis, the work items from DQWG Work Plan that might be transferred to NCWG.	Chair	
8.	5	Chair to include changes to NCWG TOR in report to HSSC9.	Chair	
9.	6.1	Chair/Secretary to draft NCWG Letter outlining the options of the purpose and how to establish such a 'bulletin' system for further consideration by the whole WG.	Chair, Secretary	
10.	6.1	Chair/Secretary to draft NCWG Letter adding a paragraph to procedures about issuing an 'invitation to meeting' letter about 6 months in advance of the NCWG meetings, to allow time for budget and visa approvals and also invite suggestions for subject matter.	Chair, Secretary	
11.	6.1	IHO(Sec) to upload revised NCWG procedures to IHO website.	IHO(Sec)	
12.	7.2	Colby Harmon to circulate draft 'table of contents' of the report into the future of paper charts list to WG members for information.	Colby Harmon	Completed by email 5 July 2017
13.	7.2	WG members to feedback on table of contents to Colby Harmon by 20 July 2017	All	
14.	7.2	Colby Harmon and Jackie Barone to assign areas of work to volunteers (US-NGA, US-NOAA, IT, CA, UK, ESRI, IHO Sec, Chair).	Colby Harmon Jackie Barone	
15.	7.3	NCWG reps to 'Vizualization' workshop to report back to NCWG on agreed protocol for seeking advice from NCWG	Chair, Colby Harmon,	
16.	7.7	Chair to augment draft ENCWG T&PNM document and circulate to WG members for review	Chair	
17.	8.1	Secretary to include clarification on option to use a range of colours for floodlighting symbol in next edition of S-4.	Secretary	
18.	8.2	Secretary to draft letter explaining the proposals to extend the use of the yacht/small craft symbol in more detail and allow WG members to consider and vote as appropriate.	Secretary	
19.	8.3	Secretary to check that S-4 has nothing contradictory on cables to Res.4/1967 (as amended by IHO-A1).	Secretary	

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20.	8.4	Chair to report back to DE and HSSC that the concept of gridded data quality proposed by DE was discussed and considered viable as a basis for further development.	Chair	
21.	8.5	IHO(Sec) to check the UOC concerning contour lines and advise ENCWG if there is a need for some revision.	IHO(Sec)	
22.	8.6	Secretary to draft amendments to S-4 for islet/above water rock symbol and circulate to WG members for review.	Secretary	
23.	8.7	Secretary to draft clarification to S-4 B-431.2 to provide guidance on the depiction of anchor berth swinging circles and circulate to WG for review.	Secretary	
24.	8.8	All to consider joining the 'Improvement of ECDIS display' sub-group and advise Chair.	All	
25.	8.8	Chair to inform FR coordinator of 'Improvement of ECDIS display' group of participants from NCWG.	Chair	
26.	8.10	Secretary to add clarification to S-4 B-254 that 'other charts' may include limits of larger scale ENC coverage and circulate to WG members for review.	Secretary	
27.	9.1	Secretary to prepare revision consequent on Res. 3/1919 (2017) for next edition of S-4 for HSSC10 and note possible changes to H20 for INT1subWG to consider.	Secretary	
28.	9.2	Secretary to prepare deletion of 'Loran' section for next edition of S-4 for HSSC10.	Secretary	
29.	9.3	Secretary to draft change to S-4 to allow use of decimals of degrees for magnetic variation and circulate to WG members for review	Secretary	
30.	9.3	Secretary to research whether there is any guidance on position of magnetic arrow related to direction of magnetic variation or variation change and draft appropriate guidance for S-4	Secretary	
31.	9.4	Secretary to draft amendments to S-4 Part A.500 for digital reprostat (vector and raster) and circulate to WG members for review	Secretary	
32.	11.1	Secretary to amend INT1 subWG TOR and procedures as agreed	Secretary	
33.	11.1	Secretary to investigate posting a list of anticipated and approved changes to INT1 on website	Secretary	
34.	11.2	UK to prepare a preliminary draft of INT1 Section V	UK	

3rd-NCWG Meeting – May 2017 in Redlands, California

35.	14	Secretary to prepare revised membership list with membership of subWG indicated. Also to contact non-active members to enquire whether still involved.	Secretary	
36.	14.3	IHO (Sec) or Chair to consider demonstrating the ESRI 'products on demand' (maritimedemo.esri.com/pod) paper chart generator to HSSC9, as part of report on future of paper chart	IHO(Sec)	
37.	AOB	Secretary to update NCWG EN template to include 'Possible impact on ENC'	Secretary	
38.	AOB	IHO(Sec) to consider whether ENs or submission papers for other WGs should include 'Possible impact on S-4' as well	IHO(Sec)	
39.	15	New NCWG officers to supply pictures and bios to IHO(Sec)	Mikko Hovi, Jackie Barone	
40.	15	All to consider whether their organization would supply a future secretary for NCWG, by end 2017	All	
41.	16	All to consider hosting NCWG4 in the period September 2018 to February 2019. (Back up plan IHO Sec in Monaco from November 2018)	All	

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NCWG Work Plan

(Updated following NCWG3)

Note: All work items completed and labelled as C , with End Date 2017, to be removed after HSSC9 endorsement for establishing the final version of the NCWG Work Plan 2018-19.

- *Objectives, Tasks and Work Items are pursued in accordance with IHO Work Programme 2017, Programme 2: Services and Standards*

(as proposed in CL54/2016 and approved by CL65/2016):

- *Element 2.2 Hydrographic Data Transfer Standards*
 - *Task 2.2.5 Provide outreach and technical assistance regarding transfer standards*
- *Element 2.3. Nautical Cartography:*
 - *Task 2.3.1 Conduct meetings of Nautical Cartography Working Group (NCWG).*
 - *Task 2.3.2 Maintain and extend the relevant IHO standards, specifications and publications.*

• *The focus is on maintaining and enhancing cartographic standards and specifications for nautical charts to suit the needs of the modern mariner in support of safe navigation and protection of the marine environment.*

- *As a Plan it will and should evolve; accordingly, contributions from WG members and others are welcomed at any time.*

NCWG Tasks

- A Maintain and extend Publication S-4 'Chart Specifications of the IHO & Regulations of the IHO for INT Charts' (IHO Task 2.3.2.1)
- B Maintain and extend Publication S-11 Part A 'Guidance for the Preparation and Maintenance of INT Chart schemes' (IHO Task 2.3.2.5)
- D Development of new (and revised) symbology (IHO Task 2.3.2)
- E Maintenance of S-4 supplementary publications INT 1, 2 & 3 (IHO Task 2.3.2.2-4)
- G Conduct meetings of NCWG (IHO Task 2.3.1)
- H Provide technical assistance to other IHO working groups and support regarding the implementation of S-100 (IHO Task 2.2.5)

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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
A16	Consideration of the 'future of the paper chart'	H	Circulate draft table of contents of the report on the "future of the paper chart" to WG Then, allocate tasks to Future of Paper Chart sub-group Members	2014	2018	O	Colby Harmon		CSPCWG10 Action 36 NCWG1 Action 54 Meeting following NCWG2 NCWG3 Action 12 Report at HSSC9.
A24	Provide guidance on the use of seals of non- IHO members on INT charts. Clarification required to prevent non-HO seals and logos being included on INT charts	M	Report to HSSC9 and remove	2014	2017	C	Sec NCWG	S-4	HSSC6-05.5C & F refer NCWG1 Action 46 WG Ltrs 02 & 08/2015 Included in S-4 4.6.0 NCWG2 Action 36, further clarification needed Included in S-4 4.7.0
A26	Portrayal subWG	H	Agree protocol for seeking advice from NCWG	2016	2017	O	Chair NCWG		HSSC7 Action 18 NCWG2 Actions 5, 22, 30-32 Attendance at NIPWG Visualization workshop May 2017. Report to HSSC9 for approval by other WGs.
A27	Provide guidance on charting Sub-surface floating pipelines	M	Report to HSSC9 and remove	2016	2017	C	Sec NCWG	S-4	NCWG2 Action 15 Endorsed by HSSC8. Included in S-4 4.7.0
A28	Future of S-4		Progress with A16			P	Chair NCWG	S-4	NCWG3 Agenda 7.4: waiting on progress with A16

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A29	Consider ICPC submission on charting submarine cables taking into account deep sea mining	L	Chair to communicate with ICPC. Sec to confirm nothing in S-4 contradictory to Res.4/1967 as amended.			P	Chair NCWG	S-4	HSSC8/68 (pending submission from ICPC). ICPC unavailable for discussion at NCWG3. NCWG3 Action 19
A30	Check the impact of the IHO Resolution 3/1919 as amended on S-4 when it is approved	L	Submit change to HSSC9 for approval if appropriate	2016	2018	O	Sec NCWG	S-4, INT1, S-32	Ref. IHO CL 27/2016 and CL 10/2017 NCWG3 Action 27
A31	Revise S-4 A-500 for digital reformat	M	Circulate draft revised A-500 for WG members comment	2017	2018	P	Sec NCWG	S-4	NCWG3 Action 31
B3	Develop guidelines for preparation & maintenance of small / medium scale ENC schemes.	H	Report to HSSC9 and remove	2009	2017	C	Sec/Chair NCWG IHB	S-11A	HSSC7 Action 22 NCWG2 Action 37 Included in S-11A 3.0.0
B4	Prepare a "basic quality assurance check-list template" for use by INT Chart Coordinators/ICCWG in support of the review of new INT charts.	M	IRCC decision to include in S-11 Part A (3.1.0)	2016	2017	C	IHO(Sec) Chair/Sec NCWG	S-11A	IHO CL 64/2015 NCWG2 Actions 38, 39 Feedback from coordinators due 31/03/2017. Refer to IRCC9. NCWG3 Agenda 7.5 – NCWG action completed
D36	User activated AtoN	M	Report to HSSC9 and remove	2015	2017	C	Sec NCWG	S-4, INT1	NCWG2 Action 10 Endorsed by HSSC8. Included in S-4 4.7.0
D37	Seagrass	M	Report to HSSC9 and remove	2016	2017	C	Sec NCWG	S-4, INT1	NCWG2 Action 23, 24 Endorsed by HSSC8. Included in S-4 4.7.0
D38	Bubbler	M	Report to HSSC9 and remove	2016	2017	C	Sec NCWG	S-4, INT1	NCWG2 Action 43, 44 Endorsed by HSSC8. Included in S-4 4.7.0

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E1	Maintain official INT 1s		Planning for next editions by INT1 sub-WG NCWG3 Agenda 41.4			O	DE: S Spohn FR: S Guillou ES: F. Yanguas	INT 1	English version 2015 (Ed 8) French version 2016 (Ed 6) Spanish version 2015(Ed 5)
E4	Symbols for vacant entries in INT 1	L	Remove agreed vacant entries and populate B48 & F29.2 next editions INT1. Report to HSSC9 and remove	2016	2017	C	Sec NCWG INT1subWG	INT 1, S-4 part B	NCWG1 Action 14 NCWG2 Actions 41-44 Included in S-4 4.7.0 INT1 changes now part of E1.
E9	Develop new section V for INT1 for 'data quality'	M	Draft to WG	2014	2018	O	Chair NCWG UK	INT1	CSPCWG10 Action 35 NCWG3 Agenda 11.2: Transferred to UK
E10	Symbol library	L	Report to HSSC9 and remove	2016	?	⊖	UK (J Carey) US (C Harmon)	S-4, INT1	NCWG Actions 45, 46 NCWG3 Agenda 3: Not required to progress at this time.
H1	Liaise with IHO subsidiary bodies and subordinate organs, e.g. WWNWS-SC, NIPWG, ENCWG, SCUFN, etc.	L	Business as usual, report to HSSC9 and remove	2016	?	O	Chair and Sec NCWG	S-4, INT1, S-32	Support the UFN Project Team, see Doc. HSSC8-07.1C INF3 NCWG Agenda 7.6: J Barone appointed as POC for UFN PT.
H2	Prepare a single educative IHO authoritative document addressing the issue of "equivalent" T&Ps for ENCs, in view of its distribution to HOs, Port State Control authorities and mariners after approval.	M	Chair to circulate revised draft to WG members for comment	2016	2017	O	NCWG Chair and ENCWG Chair	S-66 Stage 2?	HSSC8/28 NCWG3 Action 15
H3	Consider the paper on the "visualization of bathymetric uncertainties data in S-101" (Doc. HSSC8-05.6B INF6) and develop appropriate recommendations on the way forward.	M	Chair to report to DE and HSSC9. [See AU comments – how/when does NCWG contribute further?]	2016	2017	P	NCWG Chair	S-101	HSSC8/39 NCWG Action 20

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G. CSPCWG Meetings (IHO T2.3.1 refers)

Date	Meeting	Location	Meeting	Date	Meeting	Location
03-05 Nov 04	CSPCWG 1	IHB, Monaco	CSPCWG 1	28-30 April 2015	CSPCWG 11/NCWG1	Rostock, Germany
19-21 Oct 05	CSPCWG 2	IHB, Monaco	CSPCWG 2	26-29 April 2016	NCWG2	IHB, Monaco
22-24 Nov 06	CSPCWG 3	IHB, Monaco	CSPCWG 3	16-19 May 2017	NCWG3	ESRI HQ, Redlands, CA, USA
13-15 Nov 07	CSPCWG 4	IHB, Monaco	CSPCWG 4	Sept 2018 or later	NCWG4	tbd
18-21 Nov 08	CSPCWG 5	Sydney, Australia	CSPCWG 5			
01-03 Dec 09	CSPCWG 6	IHB, Monaco	CSPCWG 6			
23-26 Nov 10	CSPCWG 7	Simon's Town, S Africa	CSPCWG 7			
29 Nov–02 Dec 11	CSPCWG 8	Turku, Finland	CSPCWG 8			
13-16 Nov 12	CSPGWG 9	Seoul, Rep of Korea	CSPGWG 9			
21-24 Jan 2014	CSPCWG 10	Wellington, New Zealand	CSPCWG 10			

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LIST OF ACRONYMS AND ABBREVIATIONS USED AT NCWG3

AU	Australia
BR	Brazil
CA	Canada
CATZOC	Category of Zone of Confidence
CL	Circular Letter (of IHO)
CSPCWG	Chart Standardization and Paper Chart WG (of HSSC)
DE	Germany
DK	Denmark
doc	NCWG3 document or paper associated with the meeting
DQ	Data quality
DQWG	Data Quality Working Group (of HSSC)
ECDIS	Electronic Chart Display and Information System
ED	Existence Doubtful
EN	Explanatory note
ENC	Electronic Navigational Chart
ENCWG	Electronic Navigational Chart Working Group (of HSSC)
ES	Spain
ESRI	Environmental Systems Research Institute
FI	Finland
FLT	Flat land tint
FR	France
HAT	Highest astronomical tide
HDWG	Hydrographic Dictionary Working Group (of HSSC)
HO	Hydrographic Office
HQ	Headquarters
HSSC	Hydrographic Services and Standards Committee (of IHO)
ICA	International Cartographic Association
ICPC	International Cables Protection Committee
IHA	International Hydrographic Assembly
IHO	International Hydrographic Organization
IHO(Sec)	Secretariat of the IHO (based in Monaco)
IHO(TSSO)	Technical Standards Support Office of the IHO
IMO	International Maritime Organization
INF	Information paper associated with the meeting
INT	International
INT1	Symbols, Abbreviations, Terms used on Charts
INT3	Use of Symbols and Abbreviations - standard reference chart
IRCC	Inter-Regional Coordination Committee
IT	Italy
JP	Japan
LORAN	Long-Range Aid to Navigation
M_QUAL	Quality of data
MS	Member State (of IHO)
NCWG	Nautical Cartography Working Group (of HSSC)
NGA	National Geospatial-Intelligence Agency (US)
NIPWG	Nautical Information Provision Working Group (of HSSC)

NL	Netherlands
NO	Norway
NOAA	National Oceanic and Atmospheric Administration (US)
NM	Notice to Mariners
PDF	Portable document format
(P)NM	Preliminary Notice to Mariners
PPT	Microsoft PowerPoint
PT	Project Team
Res.	Resolution (of the IHO)
Rev	Revision (of a paper)
S-4	Chart Specifications of the IHO and Regulations for International (INT) Charts
S-11	Guidance for the Preparation and Maintenance of International Chart Schemes and Catalogue of International (INT) Charts
S-32	Hydrographic Dictionary
S-52	Specifications for Chart Content and Display Aspects of ECDIS
S-57	IHO Transfer Standard for Digital Hydrographic Data
S-100	IHO Geospatial Standard for Hydrographic data
S-100WG	S-100 Working Group (of HSSC)
S-101	ENC Product Specification
SE	Sweden
subWG	Sub-working group (of relevant HSSC WG)
T&P	Temporary and Preliminary (NMs)
TIF	Tagged Image File
(T)NM	Temporary Notice to Mariners
TOR	Terms of Reference
TR	Turkey
UK	United Kingdom of Great Britain and Northern Ireland
UOC	Use of Object Catalogue for ENC
US	United States of America
WG	Working Group (of IHO)