

**4<sup>th</sup> NCWG MEETING REPORT [FINAL v0.3]  
Den Hague, Netherlands 6-9<sup>th</sup> November 2018**

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**REPORT:** (Note: The paragraph numbering is the same as in the agenda.)

**1. Welcome, introductions and administrative arrangements**

*Docs: NCWG4-01A List of Documents (on website)*  
*NCWG4-01B List of Registered Meeting Participants*  
*NCWG 4-01C List of NCWG Members*

*Chair comments:*

The Chair welcomed delegates and commented that this was the biggest NCWG in a long time with 39 delegates. Apologies were made for the late delivery of some papers leading up to the meeting. The chair thanked the Netherlands for kindly hosting the meeting and thanked them for their support in preparing the event.

*Key note speaker comments:*

The National Hydrographer of the Royal Netherlands Navy, Capt van der Donck, provided a warm welcome to the delegates and discussed the importance of this meeting and the significant items to be discussed, particularly the future of paper charting. Capt van der Donck also highlighted some of the challenges that we have such as considering the end users needs and whether we spend a lot of time perfecting small items that the user does not notice or really value. Capt van der Donck also stated that improving the use and understanding of CATZOCs was a challenge that affects this working group and also the DQWG. The issues of representing light sectors in ENC's adequately as well as coping with the large expected volumes of data in the future were also challenges that faced the NCWG.

*New participants:*

There were many new participants at this meeting and therefore to save time the Chair did not identify new participants individually and instead welcomed everyone and invited all delegates to briefly introduce themselves. A list of meeting participants is at ANNEX C.

*Apologies:* South Africa, New Zealand, Australia (however, Australia kindly provided written inputs that were considered during the meeting)

**2. Approval of Agenda**

*Docs: NCWG4-02A Agenda*

Agenda was approved and no comments were received.

**3. Status of Actions from NCWG3**

*Docs: NCWG4-03A Status of Actions*

James Timmins (Secretary) updated the meeting on the status of actions from NCWG3.

Good progress had been made with most of the actions from NCWG3, and some from NCWG1 and 2, as detailed by the paper. Updates for actions not noted therein as completed or time expired were supplied as follows:

**NCWG1 Action 7** – Colby Harmon (US) - will be completed at NCWG4

**NCWG2 Action 20** - Chair - Further discussions required.

**NCWG2 Action 24** – Chair - Ongoing

**NCWG3 Action 3** - Chair – To be discussed at NCWG4

**NCWG3 Action 4** - Closed

**NCWG3 Action 5** – UK – Ongoing, check permissions details and report back to chair

**NCWG3 Action 6** – Sec, Chair, IHO - Ongoing

**NCWG3 Action 13** - Closed

**NCWG3 Action 14** - Closed

**NCWG3 Action 15** – Chair – will be covered under item 6.3 at NCWG4

**NCWG3 Action 16** – Chair – will be covered under item 9.1

**NCWG3 Action 34** - Closed

**NCWG3 Action 38** - Closed

**NCWG3 Action 39** - Closed

#### **4. Matters arising from HSSC**

##### **4.1 Notes from HSSC9 and HSSC10**

*Docs: None*

The chair provided a summary of the notes effecting NCWG from HSSC9 and 10. No comments were received.

##### **4.2 Actions from HSSC9 and HSSC10**

*Docs: None*

The chair provided a summary of the action items effecting NCWG from HSSC9 and 10. No comments were received.

##### **4.3 Report from S-100WG - Presentation**

*Docs: None*

The Chair provided a summary for the S-100WG who met in Singapore in April 2018. S-100 Ed4 received members support and a circular letter was issued. S-102 Bathymetric surface didn't get endorsement from HSSC and more work is needed. S-101 ENC will be available by end of 2018. Edition 1.0.0 of S-101 will be a partial version and will be used by industry to help to develop their systems in preparation for the final release of the full version in the future. Edition 1.0.0 is missing for example encryption and test data sets. Edition 2.0.0 is expected by 2020 and will include equivalent of current S-58. Edition 3.0.0 is expected by

end of 2022 and will include all parts. S-100WG also discussed cyber security considerations.

#### **4.4 Report from ENCWG - Presentation**

*Docs: None*

The chair provided a summary for the ENCWG who met in Australia, April 2018. The working group approved the clarification for ECDIS INT 1 and there has been some minor clarifications in test data sets. A new edition of S-58 Validation checks has been approved. Edition 6.0.0 was withdrawn in the summer due to potential errors and edition 6.1.0 corrected the errors and was approved to come into force in September 2019. High density contouring was discussed and it was noted that that the NCWG should consider checking the content of S-4 regarding contours. ENCWG is also considering possible changes to IHO standards due to larger format displays becoming more common on vessels.

#### **4.5 Report from NIPWG - Presentation**

*Docs: NCWG4-4.5A presentation and notes from IHO Director*

IHO Secretariat provided a presentation and slides were made available on NCWG web page. Interoperability issues may affect charting standards and should be considered. A summary of product spec status was provided as well as an update on IMO Maritime service documents. Maritime service No.11 (Nautical Chart Service) had been compiled by the IHO Secretariat on behalf of ENCWG and NCWG.

#### **4.6 Report from DQWG - Presentation**

*Docs: NCWG4-04.6A Report from DQWG - Presentation*

DQWG briefed delegates on the current issues and poor user feedback regarding CATZOC symbology. The NCWG was requested to assist with developing a new method to display quality information.

**ACTION 411** - Discuss and agree a new S-101 portrayal for Quality of bathymetric data values. This action also relates to agenda item 9.2 S-101 Portrayal. **(NCWG members)**

### **5. NCWG Administration and Work Plan**

#### **5.1 Review of Terms of Reference and Detailed Procedures**

*Docs: None*

No comments raised. Item closed.

#### **5.2 Summary of progress, items completed (SEC)**

*Docs: NCWG4-05.2 work plan items completed*

Secretary displayed the work plan and talked through the content explaining that many of the items will be discussed at NCWG4. No comments were received and the item was closed.

### **6. S-4 Chart Specifications, New and revised symbology**

#### **6.1A Future of Paper Chart [Work item A16] (Future of paper chart SubWG)**

*Docs: NCWG4-06.1A Future of Paper Chart*

See comments included at 6.1B below.

#### **6.1B Future of Paper Chart: Management Plan (Future of paper chart SubWG)**

*Docs: NCWG4-06.1AB Future of Paper Chart Management Plan*

It was agreed that all of the afternoon would be devoted to discussing the future of the paper chart and the aim was to identify volunteers to write the remaining parts of the Future of the paper chart document that needed to be submitted to the HSSC in May 2019. Mr Colby Harmon chaired this part of the meeting and received the following volunteers to author the remaining parts of the document.

	<b>2.3</b>	<b>User Requirements</b>
UK	b.	Small Scale Planning Charts
Turkey	c.	Remarks and recommendations from other stakeholders
Spain	d.	Impacts on non-navigational users of paper nautical charts
	<b>2.4</b>	<b>Production Issues</b>
Sweden	a.	Systems/databases used for both raster and vector chart production
ESRI	b.	Portrayal of raster products with S-57 attributed data
	<b>2.5</b>	<b>Paper Chart Sales and Product Usage</b>
UK	a.	Declining demand for paper charts
Colby Harmon	c.	Diminishing need for RNCs for ECDIS
Colby Harmon	d.	Recreational Boaters' Contribution to Paper Chart Sales
UK	e.	Recreational Boaters' use of Digital Charts
	<b>3.1</b>	<b>Product Coverage</b>
DE,CO, TR, IHO	a.	International (INT) Charts
NGA	b.	Rescheming paper chart coverage.
	<b>4.1</b>	<b>Regulatory and Standards Changes</b>
NGA	d.	User Requirements
Colby Harmon	e.	IHO Standards and Specifications
Colby Harmon	f.	IHO Working Groups

The Chair provided an update on the draft survey that is intended to be sent to member states after further input and comments were received from delegates to help to improve it. The delegates were asked to motivate their managers to complete the final survey and provide data.

Mikko Hovi resumed role as chair after coffee break and the last hour of the meeting was used to gather opinions and experiences from the delegation to several questions posed by the chair and members as follows:

1. How many members produce paper and electronic charts from one database?
2. If you use two databases do you plan to move to one?
3. How easy is it to produce two products, what are the challenges?
4. Do you foresee the end of paper charts?
5. How different are members small craft charts from INT charts?
6. Do members have a plan to harmonise S-57, S-100 and paper charts.
7. How are we streamlining our paper chart notice to mariners?
8. How do we harmonise source data diagrams and CATZOC?

The debate covered many issues and highlighted the need to be aware that print on demand meant different things to different members and therefore we needed to be clear in our

understanding of the definition. Several members clearly had a requirement to continue paper charting for their small craft users and Navies whilst other members had already decided that they will stop paper charting in the future. The discussion also highlighted that for some members paper charts took longer to produce from a single database compared to how they used to be produced previously. ESRI believed that the NCWG could change how paper charts look to help them to become easier to automate in the future. The UK commented that their recent market research indicated that large SOLAS vessels were not expecting to require any back up paper charts and were intending to completely operate digitally in the near future.

**ACTION 412:** Delegates who volunteered to write new sections for future of paper chart document to submit content to Colby Harmon by 31<sup>st</sup> December 2018. **(UK, TR, ES, SE, ESRI, CO, US-NGA, DE, US-NOAA, IHO Sec)**

## **6.2 Future of S-4 [Work item A28] (Chair)**

*Docs: None*

The chair invited suggestions and comments from the group regarding the future of S-4. The general view was that S-4 will still remain as the foundation standard for all charting guidance regardless of the media used. The charting principles and concepts contained in S-4 would still be required even if paper chart related content was ever removed. Several other standards including S-57 and S-101 rely on S-4. The Chair agreed that this work item should be considered again after the work on the future of the paper chart had been completed.

## **6.3 Protocol for considering portrayal requirements [Work item A26] Chair**

*Docs: None*

Chair confirmed that this work item is still in progress and updated the members on the current situation. The chair has reported the work item to the other working groups and will continue to correspond with requests for new symbols until the NCWG has formulated and approved a template for submitting portrayal requirements. The chair will draft the template and circulate to members for review by correspondence.

## **6.4 Submarine cables [Work item A29] (ICPC)**

*Docs: NCWG4-06.4A,B,C*

*Paper and presentation by ICPC*

A late paper and presentation was received during the meeting from the ICPC that briefed upon the dangers caused by cables as well as the serious problems caused when they were broken. The delegates heard about some of the challenges in managing cables information and it was acknowledged that a comprehensive cables database is required. It was noted that some existing databases contain duplications. It was stated that the engineers who lay the cables will hold the exact as laid positions but that it was possible that the cable owners who have a responsibility to publish details of the positions may sometimes use planned positions instead. When asked about disused cables, the ICPC commented that they believed that they should still be shown on charts.

Discussion also focused on buried cables, the ICPC informed that buried cables would often be buried to about 2 metres under the seafloor and the cable would be buried out as far as the 1000m contour whereupon it may then be exposed again. The members heard the ICPC concerns regarding deep sea mining in areas that have cables and the risk of cable damage if the cables were not shown on the chart. Whilst it was acknowledged by the members that

this was a risk it was generally felt that it was unlikely that information on mining activities would be submitted to the hydrographic offices. The hydrographic offices would require support from the cables and mining industry to ensure that information on cables in seabed mining areas is appropriately received.

The NCWG members felt that their offices would always consider showing any cables information received and informed the ICPC that they may sometimes not receive information from the cables company. The NCWG believed that the first priority was to ensure that the quality of information and the mechanism of information supply is improved by the cables industry. The IHO Secretariat inquired about the ICPC progress regarding establishing a data exchange mechanism and the ICPC did not have an update on the current status.

The ICPC provided suggested amendments to sections B-443 and C-408.1 but it was pointed out by the Chairman that the wording in this proposal formed the basis of the text previously used in the assembly Circular letter (ACL) 10 bis.3. This was a proposal to amend Res 4/1967 that was discussed at IHO A1. The IHO assembly had approved the proposal in an amended format and S-4 has been updated to agree with that approved version. Therefore the NCWG should remain consistent with the approved version. It was agreed that some minor changes to the wording of S-4 could be considered.

IHO Secretariat provided the following wording suggestion:

"**B-443.8** Even **buried cables** may be damaged by anchoring and marine activities. In shallow waters for instance, they should be charted in magenta with a note stating, if known, the nominal...."

**ACTION 417** - Chair and secretary to draft amendments to B-443 and C-408.1, regarding submarine cables. To include reference to IHO resolution 4/1967 as well as minor changes to wording. Circulate wording to members for review. **(Chair and Secretary)**

### **6.5 Buried cables (Sec)**

*Docs: NCWG4-6.5A*

*Buried Cables*

See notes and action from 6.4 above

### **6.6 Satellite derived bathymetry (UK)**

*Docs: NCWG4-6.6A*

*Satellite Derived Bathymetry*

The UK discussed the need for a consistent format of depicting satellite derived bathymetry on charts and a short discussion was had regarding the different styles used by offices. It was agreed that a consistent approach would be beneficial but it was suggested that a better understanding and review of the different depictions would be needed, before it could be determined if amendments to S-4 were required. It was also noted that it was important to consider the work of the DQWG as this was also clearly a data quality matter which effected source diagrams, CATZOCs and there was a requirement to define the accuracy of the data.

**ACTION 413** - Nations using Satellite Derived Bathymetry (SDB) should share their practices with the UK. The UK will then prepare a consolidated report to identify any common SDB practices and share their findings back to the nations using SDB. If further wording in S-4 required then submit a new paper. **(UK, NCWG members who use Satellite Derived Bathymetry)**

### **6.7 Ballast Water Management Areas (UK)**

*Docs: NCWG4-06.7A Ballast Water Management Areas  
Australia endorsed paper 6.7 via correspondence.*

UK provided an overview of the items raised in their paper and there was general agreement that ballast water management areas shouldn't be included on standard navigational charts. Instead it was felt that this information would be better included in other publications or should have references in pilot books instead. The chair and IHO Sec suggested that this paper should be passed to the NIPWG for consideration for S-122, *Marine Protected Areas*.

**ACTION 414** - Considering the discussions had at NCWG4, UK to send paper NCWG4-06.7A to NIPWG. **(UK)**

### **6.8 Offshore Solar Parks (NL)**

*Docs: NCWG4-06.8A ,B Offshore Solar Parks*

Netherlands presented the subject of offshore solar parks and their proposal was approved by the group, Australia endorsed paper 6.8 via correspondence.

**ACTION 415** - Considering discussions had at NCWG4, NL to send paper NCWG4-06.8A to S-100WG. **(NL)**

**ACTION 416** - Formulate S4 wording regarding solar farms and circulate to NCWG members. **(Secretary)**

### **6.9 Pilot Boarding Areas (UK)**

*Docs: NCWG4-06.9A Pilot boarding areas  
Australia provided comments via correspondence and these were circulated before the meeting*

The chair invited members to share their views and experiences regarding the issues raised by the UK. The US (NGA) stated that they had received similar user feedback regarding the auto centralisation of the symbol and the issue of two symbols being displayed when the pilot boarding area was split across two ENC's. The Chair was concerned that the ECDIS OEMS and ENCWG may consider that making a new area line style is too complex and therefore the group should also prepare an alternative solution.

The group discussed how the existing symbol could be modified to become a centralised area symbol, it was noted that it had previously been agreed that adding a circle around a point symbol could allow it to represent an area. Unfortunately, the existing pilot boarding symbol already has a circle around it therefore this option may not be possible.

It was also highlighted by the US (NOAA) that there may be other centralised symbols that would benefit from new area line styles. It was agreed that S-4 currently provides adequate guidance and styles for Pilot Boarding Areas, therefore this was a consideration for S-52 and the ENCWG and S-100WG.

**ACTION 417** - Draft a plan regarding pilot boarding area (and other) boundary symbols and a centralised symbol alternative if boundary symbols not permitted. Submit plan to S-100WG and ENCWG. **(UK and FI)**

### **6.10 Minimum size of isolated shoals (AU)**

*Docs: NCWG4-06.10A Minimum size of isolated shoals*

The chair invited comments on the paper submitted by Australia and a good discussion took place regarding the depiction of contours. Several members felt that it was the

cartographer's responsibility to determine the best way of portraying contours around isolated shoals. Other members questioned whether soundings would be displayed in the future and predicted that mariners may use higher density contours instead.

**ACTION 4\8** - Review S-4 guidance at B400 so that it is more product neutral. Identify areas that effect ENCs then contact Australia and member states. **(Secretary)**

#### **6.11 Depicting out of position soundings in swept areas (SE)**

*Docs: NCWG4-06.11A      Depicting out of position soundings in swept areas  
Supported by Ukraine via email dated 24/10/18, Australia provided comments by correspondence that were circulated before the meeting.*

No actions or wording changes were agreed during the discussions at the meeting and therefore Sweden may wish to consider reissuing the paper at the next meeting.

#### **6.12 FFI light combinations (sec)**

*Docs: NCWG4-06.12A      FFI light combinations*

The secretary presented the paper and the chair provided some background information on how Finland had discovered the difference between IALA standard E110 and IHO S-4 (and INT1).

Finland and Estonia have both identified other variations of FFI light characters and require confirmation on how they should be depicted on charts.

Denmark raised a good question about how the ranges of FFI lights should be depicted as they may potentially have different nominal ranges for the intense part of the light.

**ACTION 4\9** - Contact IALA to discuss FFI and draft proposal for S-4 depending upon their view. Also consider S-101. **(Secretary and US-NGA)**

#### **6.13 Increasing the visual impact of charted wind turbines (UK)**

*Docs: NCWG4-06.13A      Increasing the visual impact of charted wind turbines*

The members shared experiences of charting windfarms and it was reported by some nations that small craft are allowed to navigate within their wind farms. The chair reminded members that wind farm charting policy had been discussed at previous meetings as there was once a concern that the chart depiction was too cluttered. These earlier discussions led to the introduction of the current windfarm symbol. Therefore the chair recommended that the UK consider at which scale it stops representing its individual wind turbines and inserts a wind farm instead. If the UK considered it necessary they should resubmit their paper taking into account the discussions had.

#### **6.14 S-49 update (US)**

*Docs: NCWG4-06.14A & B      S-49 update and presentation*

The NGA provided a presentation that was previously delivered to NIPWG, detailing recommendations to include references to under keel management systems in S-49. It was noted that the S-129 Under keel clearance management project team should be kept informed of discussions and should also consider the work of the DQWG.

**ACTION 4\10**– **NCWG to offer support to review or update S-49. (Chair)**



**6.15 Existence Doubtful (US)**

*Docs: NCWG4-06.15 A Existence Doubtful*

The Netherlands endorsed the proposal by the US. The chair asked the members to consider what changes may be required for S-100WG. The term 'vigia' was discussed and it was agreed that it is an outdated term that may be confusing.

**Action 4\11** - Draft S-4 amendment regarding 'Existence Doubtful' and circulate to members.  
**(Secretary and Chair)**

**Action 4\12** - Chair to notify other working groups regarding change of wording in S-4 regarding 'Existence Doubtful'. **(Chair)**

**6.16 Seagrass (DE)**

*Docs: NCWG4-06.16A Seagrass*

Spain agreed with Germany regarding the need for S-101 to be able to differentiate between seagrass, weed and kelp etc. The growing importance of identifying areas of seagrass was noted. Whilst it was agreed that S-4 and INT adequately provided enough content on seagrass there was a concern that seagrass may not have been represented in S-101.

The chair asked members to consider if other recent S-4 / INT1 changes may not have been included in S-101.

**ACTION 4\13** - Chair to check Hydrographic Dictionary WG and S-101WG regarding Seagrass. All nations should report any identified inconsistencies between s-4 and S101 to S-101WG.  
**(Chair all Nations)**

**7. INT 1 / 2 / 3****7.1 Report from Secretary of INT1 subWG [Work item E1] (Sec)**

*Docs: NCWG4-07.1 Report from secretary of INT1 SubWG*

*Australia provided comments via correspondence and these were circulated before the meeting*

The chair approved the continuation of the INT1SubWG and also approved the terms of reference.

The next INT1 subWG will meet in Sweden at NCWG5. The US and Finland announced their intentions to publish their respective versions of INT 1 in the next 2-3 months.

Spain provided an update on their latest edition of INT 1 and explained that they have introduced a simple graphic in the margins of the book to help the user to identify content that had changed from the last edition.

**7.2 Development of new section V on data quality [Work item E9] UK**

*Docs: NCWG4-07.1 Development of new section V on data quality*

*Australia provided comments via correspondence and these were distributed to members and read aloud by the Chair.*

The UK presented an overview of the new section V provided in their publication NP5011. Whilst several nations supported the content there were some concerns regarding how the definitions of data quality items would be managed. The DQWG was interested to

understand more about the new section particularly with regards to its content on CATZOCs. There was also a general wish to know what feedback had been received from users so far. The new section V has not been included in the recent INT 1 publications as it was felt by the INT1subWG that the content was not quite ready yet and needed further consideration.

**ACTION 4\18** - INT1 SubWG to continue work with section V and confirm if it will be included in INT1. **(INT1subWG)**

**ACTION 4\19** - UK to share any user feedback received regarding new section V in NP5011 (UK INT 1 version) to INT1 SubWG and also NOAA. **(UK)**

### 7.3 Symbol library [Work item E10] (US)

Members debated the requirement for a symbol library as there was expected to be a large overhead cost to produce a full library. It was suggested that it may be more efficient to consider making new symbols available to all members when they are created to avoid the symbols being represented slightly differently between nations. ESRI commented that new chart producing nations considered S-4 as the official symbol set and they wanted to see consistency.

It was agreed that future automated cartographic applications may require a consistent symbol library therefore this work item would remain and the NCWG would monitor its requirements.

### 7.4 BSH resigns from producing INT1 (DE)

*Docs: \*NCWG4-07.4A BSH resigns from producing INT1 (DE) –  
\*Document withdrawn during meeting and taken off NCWG website.*

Germany withdrew its paper during the meeting and instead provided an update to members. The reasons for wishing to handover responsibility for the English language version of INT 1 were explained. Germany reassured members that they would maintain the document until a new volunteer to take over responsibility is found. It was hoped that a volunteer would be found as soon as possible and before the next meeting. Germany informed members that they would supply the reprostat needed by the volunteer to take over the maintenance of INT1.

**ACTION 4\20** - DE to report back any developments regarding volunteers to take on responsibility for English INT1 version. **(DE)**

## 8. S11 Part A (IHO Sec & CO)

*Docs: Presentation "INToGIS Project 2", Presentation, "Proposal of a methodology to Standardise the regional ENC schemes. Case study: Caribbean Sea"*

The IHO Secretariat provided a live demonstration of the new features included in the INTToGIS 2 project.

Improvements included the following:

1. Base map of Polar regions
2. ENC Scheme management procedure
3. World port layer
4. ENC scheme gap finder
5. ENC scheme overlap checker
6. New GEBCO base map and 3D globe view
7. AIS traffic density layer
8. CATZOC layer
9. Other IHO layers and email notification functions

The new INTToGIS 2 system is expected to enter service in the first quarter of 2019.

Colombia presented an overview of their proposed methodology to standardise the ENC schemes in the Caribbean. A regional scheme for bands 1,2 and 3 is required based upon unification of ENC cell sizes and coverage extents, SCAMIN and compilation scale.

The chairman and IHO Sec thanked Colombia for their presentation and praised Olga for her work on this subject, recommending also to deliver this presentation at the forthcoming ICCWG meeting of the MACHC.

## **9. Liaison with other working groups**

### **9.1 Document on 'equivalent' T&P NMs [Work item H3] Chair**

*Docs: None*

The Chair provided a background overview to the subject of T&P NM information in ENCs and the differences in practices between producers. It was agreed that section B-600 in S-4 is adequate. This work item will continue and the chair will keep members informed of progress.

### **9.2 S-101 Portrayal**

*Docs: None*

No report was received so the chair provided a verbal summary of the main developments. The NCWG has been tasked with providing symbol concepts for new features. Default S-52 symbols will be carried across into S-101 and then will be reviewed at a later date. The Chair has a list of feature classes that need new symbology. Some of the new features could potentially use existing symbols. It was reported that S-101 edition 1 is planned to be published this year and it will be only be a partial portrayal and will be similar to S-57. Edition 2 is planned for 2020 and edition 3 is planned for 2022.

Members discussed the process for creating new symbol concepts. New symbol ideas can be hand drawn or digitally illustrated and then passed to the US-SPAWAR who will create the final version.

## **10. Vessel Incidents**

### **10.1 Marine Incidents: Grounding of "Vasco de Gama" (UK)**

*Docs: NCWG4-10.1*

*Vasco de Gama*

*Australia provided comments via correspondence and these were circulated before the meeting.*

UK provided a summary of the key findings from the vessel incident report. The members agreed that this incident did not appear to have any cartographic issues and was instead more to do with seamanship.

### **10.2 Marine Incidents: Grounding of "Nova Cura" (NL)**

*Docs: NCWG4-10.2 Nova Cura and presentation*

*Australia provided comments via correspondence and these were circulated before the meeting. Australia considers that there should be a way of highlighting areas where sector lights intersect with a purpose and suggested ways of depicting this in ENC and paper charts.*

Netherlands gave a presentation with graphics showing the charted depiction of the location of the vessel incident on paper charts and ENCs. A short discussion was had regarding the

depiction of light sectors in ENCs. S-101 will allow cartographers to encode a sector limit length, this will help to ensure that any dangers that are marked by the sectors are adequately covered. The members were asked to suggest any improvements that could be made to S-57. One of the issues is the visibility of CATZOC, which could improve the use and interpretation of the object. The IHO Secretariat highlighted the importance of passing new information to the primary charting authority and the UK confirmed that it was their policy to pass details of safety related information to the primary charting authority.

### **10.3 Marine Incidents: Grounding of "Muros" (UK)**

*Docs: NCWG4-10.3*

*Muros*

UK provided a summary of the vessel incident report and discussion centred around the issue of 'alarm fatigue'. The chair asked members to consider what we can do to help to improve the situation. It was suggested that NCWG members could help to reduce the amount of alarms by ensuring that deep water obstructions / foul grounds are given a depth value in ENCs. Obstructions within 300m of water that do not have a depth value attributed will cause an alarm on ECDIS. The Netherlands suggested that it may be useful for members to have some guidance on ECDIS alarms.

**ACTION 422** - Chair NCWG to report back findings to HSSC regarding vessel incidents and 'alarm fatigue'. **(Chair)**

### **10.4 Marine Incidents: Grounding of "Kea Trader" (IHO)**

*Docs: NCWG4-10.4*

*Kea Trader*

*Australia provided comments via correspondence and these were circulated before the meeting. Australia recommended that HOs consider compiling more areas and perform less generalisations when dealing with depth areas containing rocks or obstructions. Australia also suggested that depicting the real shape and size of features would be preferable to generalised point features when viewed in ECDIS.*

The IHO Secretariat provided a short summary of the principle findings of the incident report. No comments were made by members present during the meeting.

## **11. Review of Actions and Work Plan**

### **11.1 Review of meeting actions**

The chair read through all of the 22 meeting actions that were identified during the meeting. The actions were approved by the Chair and members. Actions from NCWG4 are listed at Annex A.

### **11.2 New Item's for work Plan**

It was agreed that the Chair and Secretary will review the minutes and identify any potential updates to the work plan.

## **12.INF papers, reports and Any Other Business**

### **12.1 INF1 Wreck symbolisation (NL)**

*Docs: NCWG4-12.1 INF1 Wreck symbolisation*

A good discussion was had by members regarding whether or not it was considered acceptable to show wrecks as swept based upon findings from high quality multi-beam surveys. Whilst some members felt that this was ok there were concerns from some members and also the DQWG regarding the consistency and standard of accuracy between

different nations. Finland informed the meeting that they already classified certain underwater features as swept based upon multi beam survey data only. UK will give feedback later on their policy regarding this issue.

**ACTION 4114** - Netherlands to draft wording for S-4 regarding swept wrecks and also consider impact on S-57. **(NE)**

### **12.2 INF2 Fishing nets attached to wrecks (UK)**

*Docs: NCWG4-12.2 INF2 Fishing nets attached to wrecks*

The chair encouraged members to share their practices and policy's regarding nets attached to wrecks. The US, DE and ZA all informed members that they would show the least depth of nets attached to wrecks whereas UK, ES and SE advised that they show the depth of the wreck only and do not show the shoaler depth of any nets that were attached. The IHO Secretariat recommended that the least depth of nets should be shown and director Kampfer shared an account of a small fishing vessel in Namibian waters that snagged a fishing net that was attached to a wreck and sadly sank with several lives lost.

**ACTION 4115** - Draft wording for S-4 regarding recommendation to issue chart correcting notice to mariners when shoaler wreck depths from snagged fishing nets are discovered. Also include need for temporary notice until nets cleared. **(UK)**

### **12.3 INF3 Optimised content of DE INT charts and references (DE)**

*Docs: NCWG4-12.3 INF3 Optimised content of DE INT charts and references*

The members considered the reduced content shown in the new DE INT charts. Some members questioned how efficient it would be to maintain two versions (national and INT) of the same chart. No agreement was reached regarding the requirements for references to national and INT charts and DE was advised to consider resubmitting their paper if they felt that further discussion was required.

**ACTION 4121** - If needed Germany to resubmit paper regarding chart references. **(DE)**

### **12.4 Data Quality (Chair)**

*Docs: NCWG4-12.4 INF4 Data Quality*

This item was covered under agenda item 4.6 *Report from DCWG – Presentation.*

### **12.5 Distinction between Obstructions and Foul Grounds (FR & AU)**

*Docs: NCWG4-12.5 INF5 Distinction between Obstructions and Foul Grounds*

A late paper was received from France and Australia who had also prepared a presentation. The chair commended the authors on providing a well written paper. Discussion was had regarding the use of the terms foul ground and it was noted that similar discussions were had at previous NCWG meetings that led to s4 being amended to harmonise the use of the terms.

**ACTION 4116** - Further consider issue of distinguishing between obstructions and foul ground, propose changes for S4. **(FR & AU)**

## **13. Date and Location of next meetings**

**NCWG5** – 5-8<sup>th</sup> November 2019 (dates to be confirmed) Stockholm, Sweden

**NCWG6**- Cadiz, Spain

#### **14. Closing remarks**

The Chair thanked the Netherlands for hosting NCWG4 and thanked all of the members for participating. The US (NOAA) commented that the keynote speech by Capt van der Donck NL Navy was very good and clearly understood the importance of the NCWGs work.

**Agenda for 4th NCWG MEETING**  
**6-9 November 2018, The Hague, Netherlands**

Please assemble at 0915 for 0930 start (Tuesday) and 0845 for 0900 start (other days).  
 Close by approximately 1630 (1300 on Friday).

- 1. Welcome, Introductions and Administrative Arrangements**
- 2. Approval of Agenda**
- 3. Status of Actions from NCWG3**
- 4. Matters arising from HSSC**
  - 4.1. Notes from HSSC9 and HSSC10 **(Chair)**
  - 4.2. Actions from HSSC9 and HSSC10 **(Chair)**
  - 4.3. Report from S-100WG **(Chair)**
  - 4.4. Report from ENCWG **(Chair)**
  - 4.5. Report from NIPWG **(IHO Sec)**
  - 4.6. Report from DQWG **(DQWG Chair)**
- 5. NCWG Administration and Work Plan**
  - 5.1. Review of Terms of Reference and Detailed Procedures **(Chair)**
  - 5.2. Summary of progress, items completed **(Sec)**
- 6. S-4 Chart Specifications, New and revised symbology**
  - 6.1. Future of Paper Chart [Work item A16] **(US)**
  - 6.2. Future of S-4 [A28] **(Chair)**
  - 6.3. Protocol for considering portrayal requirements [A26] **(Chair)**
  - 6.4. Submarine cables [A29] **(ICPC)**
  - 6.5. Buried cables **(Sec)**
  - 6.6. Satellite derived bathymetry **(UK)**
  - 6.7. Ballast Water Exchange Areas **(UK)**
  - 6.8. Offshore solar farms **(NL)**
  - 6.9. Pilot boarding areas in S57 **(UK)**
  - 6.10. Minimum size of isolated shoals **(AU)**
  - 6.11. Depicting out of position soundings in swept areas **(SE)**
  - 6.12. FFL light combinations **(sec)**
  - 6.13. Increasing the visual impact of charted wind turbines **(UK)**
  - 6.14. S-49 update **(US)**
  - 6.15. Existence Doubtful **(US)**
  - 6.16. Seagrass **(DE)**
- 7. INT 1 / 2 / 3**
  - 7.1. Report from Secretary of INT1 subWG [E1] **(Sec)**
  - 7.2. Development of new section V on data quality [E9] **(UK)**
  - 7.3. Symbol library [E10] **(US)**
  - 7.4. Further updating of English INT1 **(DE)**
- 8. S-11 Part A**
- 9. Liaison with other working groups**
  - 9.1. Document on 'equivalent' T&P NMs [H3] **(Chair)**

9.2. S-101 Portrayal **(Chair)**

**10. Lessons learned from Marine Incidents**

- 10.1. Vasco de Gama **(UK)**
- 10.2. Nova Cura **(NL)**
- 10.3. Muros **(UK)**
- 10.4. Kea Trader **(IHO)**

**11. Review of Actions and Work Plan**

- 11.1. Review of Meeting Actions
- 11.2. New items for Work Plan

**12. INF papers, reports and Any Other Business**

- 12.1 INF1. Wreck symbolisation **(NL)**
- 12.2 INF2. Fishing nets attached to wrecks **(UK)**
- 12.3 INF3. Optimised content of DE INT charts and references **(DE)**
- 12.4 INF4. Data Quality **(DQWG)**
- 12.5 INF5. Distinction between obstructions and foul grounds **(FR)**

**13. Date and location of next meetings**

- NCWG5 - October/November 2019 - Sweden (tbc)
- NCWG6 - November 2020 (tbd)

**14. Closure of meeting**



## ANNEX B

Document No	Posted On	Document Title
	1 June 2018 2 July 2018 6 June 2018	<a href="#"><u>NCWG Letter 03/2018</u></a>  Logistic information ( <a href="#"><u>NCWG Letter 04/2018</u></a> )  <a href="#"><u>On-line Registration</u></a>
NCWG4-01A		List of Documents (this <a href="#"><u>html</u></a> page)
NCWG4-01B	30 Oct 2018	<a href="#"><u>List of Meeting Participants</u></a>  The <a href="#"><u>List of Participants</u></a> is kept up-to-date and available on the IHO on-line registration system
NCWG4-01C	--	<a href="#"><u>List of NCWG Members</u></a>
NCWG4-02A	29 Oct	Agenda ( <a href="#"><u>.doc</u></a> , <a href="#"><u>.pdf</u></a> ) and Timetable ( <a href="#"><u>.doc</u></a> , <a href="#"><u>.pdf</u></a> )
NCWG4-03A	29 Oct	Status of Actions from NCWG3 ( <a href="#"><u>.doc</u></a> )
NCWG4-04.1A		Notes from HSSC9 and HSSC10
NCWG4-04.2A		Actions from HSSC9 and HSSC10
NCWG4-04.3A		Report from S-100WG - <i>Presentation</i>
NCWG4-04.4A		Report from ENCWG - <i>Presentation</i>
NCWG4-04.5A	12 Nov	Report from NIPWG - <a href="#"><u>Presentation</u></a>
NCWG4-04.6A	15 Oct	Report from DQWG - <a href="#"><u>Presentation</u></a>
NCWG4-05.1A		Review of Terms of Reference and Detailed Procedures
NCWG4-05.2A	29 Oct	Work Plan: Summary of progress, items completed ( <a href="#"><u>.doc</u></a> )

NCWG4-06.1A	15 Oct	<a href="#">Future of Paper Chart</a>
NCWG4-06.1B <b>Rev2</b>	29 Oct	<a href="#">Future of Paper Chart: Management Plan</a>
NCWG4-06.1C	29 Oct	Survey to Accompany the Future of the Paper Chart Document ( <a href="#">.doc</a> )
NCWG4-06.2A		Future of S-4
NCWG4-06.3A		Protocol for considering portrayal requirements
NCWG4-06.4A	12 Nov	Submarine cables - <a href="#">Proposed S-4 Amendments</a> - <a href="#">Presentation</a> - <a href="#">ICPC Recommendation 17, May 2017</a> - Submarine Cable Operations in Deep Seabed Mining Concessions Designated by the International Seabed Authority
NCWG4-06.5A	29 Oct	<a href="#">Buried cables</a>
NCWG4-06.6A	29 Oct	<a href="#">Depiction of Satellite Derived Bathymetry</a>
NCWG4-06.7A	20 Sep	<a href="#">Ballast Water Management Areas</a>
NCWG4-06.8A	20 Aug	<a href="#">Offshore Solar Parks</a>
NCWG4-06.9A	20 Sep	<a href="#">Pilot Boarding Areas</a>
NCWG4-06.10A	20 Sep	<a href="#">Minimum size of isolated shoals</a>
NCWG4-06.11A	20 Sep	<a href="#">Depicting out of position soundings in swept areas</a>
NCWG4-06.12A	29 Oct	<a href="#">FFL light combinations</a>
NCWG4-06.13A	29 Oct	<a href="#">Increasing the visual impact of wind turbines on paper charts</a>
NCWG4-06.14A	29 Oct	<a href="#">S-49 Update</a>
NCWG4-06.14B	29 Oct	Underkeel Clearance Management (UKCM) Systems in S-49 (Standardization Of Mariners' Routeing Guides), M-

		3 (IHO Resolutions), and S-32 (IHO Hydrographic Dictionary) <a href="#"><u>Presentation</u></a>
NCWG4-06.15A	29 Oct	<a href="#"><u>Existence Doubtful Definition/Guidance</u></a>
NCWG4-06.16A	2 Nov	<a href="#"><u>Seagrass</u></a>
NCWG4-07.1A	20 Sep	<a href="#"><u>Report from Secretary of INT1 subWG</u></a>
NCWG4-07.2A	20 Sep	<a href="#"><u>Development of new section V on data quality</u></a>
NCWG4-07.3A		Symbol library
NCWG4-08.1A	12 Nov	S-11 Part A and B - <a href="#"><u>Presentation</u></a>
NCWG4-08.2A	12 Nov	<a href="#"><u>Proposal (by CO) of a methodology to standardize the regional ENC schemes. Case of study: Caribbean Sea</u></a>
NCWG4-09.1A		Document on 'equivalent' T&P NMs
NCWG4-09.2A		S-101 Portrayal
NCWG4-10.1A	20 Sep	<a href="#"><u>Marine Incidents: Grounding of "Vasco de Gama"</u></a>
NCWG4-10.2A	20 Aug 26 Sep	<a href="#"><u>Marine Incidents: Grounding of "Nova Cura" Report</u></a>
NCWG4-10.3A	20 Sep	<a href="#"><u>Marine Incidents: Grounding of "Muros"</u></a>
NCWG4-10.4A	22 Aug	<a href="#"><u>Marine Incidents: Grounding of "Kea Trader"</u></a> <a href="#"><u>Link</u></a> to Safety4Sea Article
NCWG4-12.1 INF1	29 Oct	<a href="#"><u>Symbolisation of wrecks with new techniques</u></a>

NCWG4-12.2 INF2	29 Oct	<a href="#">Fishing nets attached to wrecks</a>
NCWG4-12.3 INF3	29 Oct	<a href="#">INT chart content and references</a>
NCWG4-12.4 INF4	2 Nov	<a href="#">Data Quality – a shared interest between chart producer and user</a>
NCWG4-12.5 INF5	12 Nov	<a href="#">Distinction between obstructions and foul grounds</a>

**ANNEX C**

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## ANNEX D

## RETAINED NCWG2 ACTIONS

No	NCWG 2 Agenda item	NCWG2 Action	Delegate	Status at NCWG4
2\20	8.6	Chair to discuss DQ options with Ron Furness (ICA)	Chair	ongoing
2\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	ongoing

## RETAINED NCWG3 ACTIONS

No	NCWG 3 Agenda item	NCWG3 Action	Delegate	Status at NCWG 4
3\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	Ongoing
3\5	3	UK to define the freedom for using UKHO symbol sets.	UK	Ongoing- UK check permissions details
3\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)	In progress

3\15	7.3	NCWG reps to 'Vizualization' workshop to report back to NCWG on agreed protocol for seeking advice from NCWG. This action will be completed at NCWG4	Chair, Colby Harmon,	ongoing
3\16	7.7	Chair to augment draft ENCWG T&PNM document and circulate to WG members for review	Chair	Ongoing
3\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)	In progress

#### Actions from NCWG4

No	NCWG 4 Agenda item	NCWG4 Action	Delegate	Status
4\1	4.6	Discuss and agree a new S-101 symbol for QOBD (Quality of Bathymetric Data) as part of missing symbols work. Inform S-101 project team when considering alarms and indications.	Chair	ongoing
4\2	6.1B	Delegates who volunteered to write new sections for future of paper chart document to submit content to Colby Harmon by 31 <sup>st</sup> December 2018	UK, TR, ES, SE, ESRI, CO,NGA, DE, NOAA, IHO Sec	ongoing
4\3	6.6	Nations using Satellite Derived Bathymetry (SDB) should share their practices with the UK. The UK will then prepare a consolidated report to identify any common SDB practices and share their findings back to the nations using SDB. If further wording in S-4 required then submit a new paper.	UK and all members who use satellite derived bathymetry	ongoing
4\4	6.7	Considering discussions had UK to send paper NCWG4-06.7A to NIPWG	UK	completed
4\5	6.8	Considering discussions had NL to send paper NCWG4-06.8A to S100WG	NL	ongoing
4\6	6.8	Formulate S-4 wording regarding solar farms and circulate to NCWG members.	Secretary	ongoing
4\7	6.9	Draft a plan regarding pilot boarding area (and other) boundary symbols and a centralised symbol alternative if boundary symbols not permitted. Submit plan to S-100WG and ENCWG.	UK and FI	ongoing



No	NCWG 4 Agenda item	NCWG4 Action	Delegate	Status
4\8	6.10	Review S-4 guidance at B400 so that it is more product neutral. Identify areas that effect ENC's then contact Aus and member states.	Secretary	ongoing
4\9	6.12	Contact IALA to discuss FFI and draft proposal for S4 depending upon their view. Also consider S-101.	Secretary and NGA	ongoing
4\10	6.14	NCWG to offer support to review or update S-49.	Chair	ongoing
4\11	6.15	Draft S-4 amendment regarding 'Existence Doubtful' and circulate to members.	Secretary and Chair	ongoing
4\12	6.15	Chair to notify other working groups regarding change of wording in S-4 regarding 'Existence Doubtful'.	Chair	ongoing
4\13	6.16	Chair to check Hydrographic Dictionary WG and S-101WG regarding Seagrass. All nations should report any identified inconsistencies between s-4 and S101 to S-101WG.	Chair and all nations	ongoing
4\14	12.1 INF1	Netherlands to draft wording for S-4 regarding swept wrecks and also consider impact on S-57.	NL	ongoing
4\15	12.2 INF2	Draft wording for S-4 regarding recommendation to issue chart correcting notice to mariners when shoaler wreck depths from snagged fishing nets are discovered. Also include need for temporary notice until nets cleared.	UK	ongoing
4\16	12.5 INF5	Further consider issue of distinguishing between obstructions and foul ground, propose changes for S-4.	FR, AU	ongoing
4\17	6.4	Chair and Secretary to draft amendments to B443 and C408.1 Submarine cables, to include reference to IHO resolution 4/1967 as well as minor changes to wording. Circulate wording to members for review.	Chair and Secretary	ongoing
4\18	7.2	INT1 SubWG to continue work with section V and confirm if it will be included in INT1.	INT1 SubWG	ongoing
4\19	7.2	UK to share any user feedback received regarding new section V in NP5011 (UK INT 1 version) to INT1 SubWG and also NOAA.	UK	ongoing

No	NCWG 4 Agenda item	NCWG4 Action	Delegate	Status
4\20	7.4	DE to report back any developments regarding volunteers to take on responsibility for English INT1 version.	DE	ongoing
4\21	12.3	If needed Germany to resubmit paper regarding chart references.	DE	ongoing
4\22	10.3	Chair NCWG to report back findings to HSSC regarding vessel incidents and 'alarm fatigue'	Chair	ongoing

**NCWG WORK PLAN 2018-19**

(Updated for NCWG4 to 13/11/18)

**ANNEX E**

- Objectives, Tasks and Work Items are pursued in accordance with IHO Work Programme 2018-2020, Programme 2 (Services and Standards):
  - Element 2.2 Foundational Nautical Cartography Framework
    - Task 2.2.1 Maintain S-4 (Regulations for International (INT) Charts and Chart Specifications of the IHO) and related publications (INT 1/2/3)
    - Task 2.2.2 Maintain S-11 Part A -Guidance for the Preparation and Maintenance of International Chart Schemes and Catalogue of International (INT) Charts
- The objective is to develop, maintain and promote the foundational standards, specifications, guidelines and services related to nautical cartography to meet the requirements of the stakeholders.
- As a Plan it will and should evolve; accordingly, contributions from WG members and others are welcomed at any time.

**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**

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	Allocate remaining tasks. Draft to be circulated to WG.	2014	2018	O	Colby Harmon		CSPCWG10 Action 36 NCWG1 Action 54 Meeting following NCWG2 NCWG3 Action 12 Report at HSSC9 Report at HSSC10
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		On hold, pending progress with A16			P	Chair NCWG	S-4	NCWG3 Agenda 7.4: waiting on progress with A16
A29	Consider ICPC submission on charting submarine cables taking into account deep sea mining	L	On hold, pending further submission from ICPC			P	Chair NCWG	S-4	HSSC8/68 (pending submission from ICPC). ICPC unavailable for discussion at NCWG3. NCWG3 Action 19 completed: S-4 contains nothing contradictory to Res.4/1967 (as amended IHO-A1)
A30	Check the impact of the IHO Resolution 3/1919 as amended on S-4 when it is approved	L	Include changes in S-4 4.8.0	2016	2018	O	Sec NCWG	S-4, INT1, S-32	Ref. IHO CL 27/2016 and CL 10/2017 Proposed changes for HSSC10
A31	Revise S-4 A-500 for digital reprostat	M	Include changes in S-4 4.8.0	2017	2018	O	Sec NCWG	S-4	NCWG3 Action 31 Proposed changes for HSSC10

E1	Maintain official INT 1s		Publication next editions planned for 2018			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)
E9	Develop new section V for INT1 for 'data quality'	M	Draft under consideration by INT1 subWG	2014	2018	O	Chair NCWG INT1 subWG	INT1	CSPCWG10 Action 35 NCWG3 Agenda 11.2: Transferred to UK
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.
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		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.	2016		C	NCWG Chair	S-101	HSSC8/39 NCWG Action 20 Reported at HSSC9

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

**Meetings (Task G)**

<b>Date</b>	<b>Location</b>	<b>Activity</b>
26-29 April 2016	IHB, Monaco	NCWG2
16-19 May 2017	Redlands, CA, USA	NCWG3
6-9 November 2018	The Hague, Netherlands	NCWG4
5-8 November 2019	Stockholm, Sweden	NCWG5

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**ANNEX F****LIST OF ACRONYMS AND ABBREVIATIONS USED AT NCWG4**

<b>AU</b>	Australia
<b>BR</b>	Brazil
<b>CATZOC</b>	Category of Zone of Confidence
<b>CL</b>	Circular Letter (of IHO)
<b>CO</b>	Colombia
<b>CSPCWG</b>	Chart Standardization and Paper Chart WG (of HSSC)
<b>DE</b>	Germany
<b>DK</b>	Denmark
<b>doc</b>	NCWG4 document or paper associated with the meeting
<b>DQ</b>	Data quality
<b>DQWG</b>	Data Quality Working Group (of HSSC)
<b>E110</b>	IALA standard for rhythmic characters of lights on aids to navigation
<b>ECDIS</b>	Electronic Chart Display and Information System
<b>ED</b>	Existence Doubtful
<b>EN</b>	Explanatory note
<b>ENC</b>	Electronic Navigational Chart
<b>ENCWG</b>	Electronic Navigational Chart Working Group (of HSSC)
<b>ES</b>	Spain
<b>ESRI</b>	Environmental Systems Research Institute
<b>FI</b>	Finland
<b>FLT</b>	Flat land tint
<b>FR</b>	France
<b>HAT</b>	Highest astronomical tide
<b>HDWG</b>	Hydrographic Dictionary Working Group (of HSSC)
<b>HO</b>	Hydrographic Office
<b>HQ</b>	Headquarters
<b>HSSC</b>	Hydrographic Services and Standards Committee (of IHO)

<b>IALA</b>	International Association of Lighthouse Authorities
<b>ICA</b>	International Cartographic Association
<b>ICPC</b>	International Cables Protection Committee
<b>IHA</b>	International Hydrographic Assembly
<b>IHO</b>	International Hydrographic Organization
<b>IHO(Sec)</b>	Secretariat of the IHO (based in Monaco)
<b>IHO(TSSO)</b>	Technical Standards Support Office of the IHO
<b>IMO</b>	International Maritime Organization
<b>INF</b>	Information paper associated with the meeting
<b>INT</b>	International
<b>INT1</b>	Symbols, Abbreviations, Terms used on Charts
<b>INT3</b>	Use of Symbols and Abbreviations - standard reference chart
<b>IRCC</b>	Inter-Regional Coordination Committee
<b>IT</b>	Italy
<b>JP</b>	Japan
<b>M_QUAL</b>	Quality of data
<b>MS</b>	Member State (of IHO)
<b>NCWG</b>	Nautical Cartography Working Group (of HSSC)
<b>NGA</b>	National Geospatial-Intelligence Agency (US)
<b>NIPWG</b>	Nautical Information Provision Working Group (of HSSC)
<b>NL</b>	Netherlands
<b>NO</b>	Norway
<b>NOAA</b>	National Oceanic and Atmospheric Administration (US)
<b>NM</b>	Notice to Mariners
<b>NP 5011</b>	Nautical Publication 5011, symbols and abbreviations used on Admiralty paper charts, published by UK.
<b>OEMs</b>	Original equipment manufacturers for ECDIS
<b>PDF</b>	Portable document format
<b>(P)NM</b>	Preliminary Notice to Mariners
<b>PPT</b>	Microsoft PowerPoint
<b>PT</b>	Project Team



<b>Res.</b>	Resolution (of the IHO)
<b>Rev</b>	Revision (of a paper)
<b>S-4</b>	Chart Specifications of the IHO and Regulations for International (INT) Charts
<b>S-11</b>	Guidance for the Preparation and Maintenance of International Chart Schemes and Catalogue of International (INT) Charts
<b>S-32</b>	Hydrographic Dictionary
<b>S-52</b>	Specifications for Chart Content and Display Aspects of ECDIS
<b>S-57</b>	IHO Transfer Standard for Digital Hydrographic Data
<b>S-100</b>	IHO Geospatial Standard for Hydrographic data
<b>S-100WG</b>	S-100 Working Group (of HSSC)
<b>S-101</b>	ENC Product Specification
<b>S-122</b>	Marine Protected Area Specification
<b>SCAMIN</b>	The SCAMIN value of an object determines the display scale below which the object is no longer visible on an Electronic Chart Display and Information System (ECDIS).
<b>SE</b>	Sweden
<b>Sec</b>	Secretary
<b>SOLAS</b>	The international convention for Safety of Life at Sea
<b>subWG</b>	Sub-working group (of relevant HSSC WG)
<b>T&amp;P</b>	Temporary and Preliminary (NMs)
<b>TIF</b>	Tagged Image File
<b>(T)NM</b>	Temporary Notice to Mariners
<b>TOR</b>	Terms of Reference
<b>TR</b>	Turkey
<b>UK</b>	United Kingdom of Great Britain and Northern Ireland
<b>UOC</b>	Use of Object Catalogue for ENC
<b>US</b>	United States of America
<b>WG</b>	Working Group (of IHO)
<b>ZA</b>	South Africa