

# 3rd ENCWG Meeting

## Wollongong, Australia (16 - 18 April 2018)

### Minutes

Chair: Thomas Mellor (UKHO)  
Vice Chair: Mikko Hovi (Finland)  
Secretary: Anthony Pharaoh (IHO Secretariat)

#### **Annexes:**

Annex A – Actions  
Annex B – Agenda  
Annex C – List of Participants

#### **WG Member abbreviations:**

AS - Alvaro SANCHEZ	YL - Yoojung LEE
FR - Frank HIPPMANN	PK - Promise KHOSA
MC - Marcelo CARNEIRO	FjN - Fhatuwani joyce NENGWENANI
MS - Matias SIFON	FM - Felipe DE CASTRO MAQUEDA
RF - Richard FOWLE	HE - Hans ENGBERG
BC - Bruno CARDOSO	TM - Thomas MELLOR
EH - Elizabeth HAHESSY	MB - Megan BARTLETT
GK - Gabriela KOTSULIM	EL - Eric LI
MD - Mike Drake	HP - Hannu PEIPONEN
MH - Mikko HOVI	SL - Sanghyun LEE
CM - Christian MOUDEN	AP - Anthony PHARAOH
KA - Khoirul ANWAR	JW - Jeff WOOTTON
AM - Arno MEURINK	TdP - Tom DE PUYT
ME - Marvin ESPINO	SS - Svein SKJAEVELAND
OaF - Odd Aage FOERE	TR - Tom RICHARDSON
GT - Guttorm TOMREN	HB- Holger Bothein

#### **1. Opening and Administrative Arrangements**

Hillary Thompson, Director at the Australian Hydrographic Office, welcomed the ENCWG participants to Wollongong, on behalf of the Hydrographer of the Australian Hydrographic Service (AHS), Commodore Fiona FREEMAN. She reported that it was encouraging to see a good international representation noting that 30 delegates from seventeen Member States and six industry organizations were participating in the meeting.

Tom Mellor welcomed all members to the meeting and thanked the AHS for hosting the meeting and for their warm hospitality.

##### **1.1 List of Documents**

The Chair reviewed the list of documents and noted that several late documents had been received. These had been posted under item 14 (Any Other Business).

## 1.2 List of Members and Meeting Participants

The Chair noted that the participants from South Africa would not be able to attend the meeting and the list of participants would be amended accordingly.

## 1.3 ENCWG ToRs

The meeting briefly reviewed the Terms of Reference and noted the addition of S-63 to the list of standards the ENCWG are now responsible for

## 1.4 S-101PT - Work Plan and Future Meetings

To be discussed under item Agenda item 9. Chair requested members to consider hosting future meetings and to also consider if ENCWG and S-101PT meetings should be held back to back.

## 2. **Approval of Agenda**

2.1 Agenda. The meeting approved the agenda with some changes to the order in which items would be taken.

## 3. **Matters Arising, HSSC Items and Other WG Reports**

### 3.1 Approval of ENCWG2 Minutes

The Chair reported that minutes had been circulated and made available on the ENCWG2 document page. There being no comments, the minutes were taken as approved.

### 3.2 Review ENCWG2 Actions

The Chair reported that all the outstanding actions from the 1<sup>st</sup> meeting were all on hold as these will all require the publication of new editions of S-52 and S-54, which are currently not planned. Most of the required extensions will be forwarded to the S-101PT. Solutions have been found for actions 9 and 11. The status of other actions is listed below:

Para	Action #	Status
5.1	12	Completed
5.2	13	Completed
5.3	14	Completed
5.3	15	Completed
5.3	16	Completed
5.4	17	Completed
5.5	18	Time Expired
5.6	19	Time Expired
5.6	20	Completed
5.7	21	Time Expired
5.8	22	Completed
5.9	23	Completed (manufacture contact information removed).
5.9	24	Completed
5.9	25	Completed – (Note; information for Port State Control (PSC) has been included on the web site)
6.1	26	Completed
6.1	27	Completed

6.2	28	Completed (Chair has included update to in ENCWG report to HSSC10)
6.3	29	Completed
6.3	30	Ongoing
6.3	31	Completed (See 30)
6.3	32	Completed (Issue with production systems)
6.5	33	Time Expired - Annual Performance Test – request feedback from CIRM meeting. HP noted that IMO were not in favour of this. TM – we will need to visit this again later.
6.7	34	Completed (CL on CATZOC sent- see also DQWG paper 5.6.1).
7.4A	35	Completed. (Report provided to HSSC9 in response to action HSSC8/56)
7.4E	36	Ongoing (Work being done by joint S-101 / ENC sub-group).

### 3.3 Decisions and Actions from HSSC9

The Chair reported on the status of actions from the 9<sup>th</sup> HSSC meeting.

HSSC9/03 ENCWG and S-100WG to monitor any possible impact of the work on the agreed e-Navigation. Ongoing.

(Former HSSC8/28) NCWG and ENCWG to draft 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. Navigation outputs on ECDIS related standards and S-100 related standards respectively. Chair reported that the T&P paper is to be submitted to HSSC10.

HSSC9/14 HSSC welcomed the establishment of the “transversal” ENC Display SubWG under the ENCWG, to concentrate on the improvement of ENC display. Completed, SubWG underway.

HSSC9/19 ENCWG to address the issues raised by INTERTANKO in its paper submitted to HSSC-9 and provide HSSC/IHO Sec. with appropriate comments for further consideration by HSSC WGs and PTs if appropriate. IHO Sec, then to provide INTERTANKO with a consolidated response on the issues raised in its submission paper. Completed.

HSSC9/20 HSSC approved the funding request to create S-58 ENC datasets to support validation test for critical errors only. Completed.

HSSC9/21 ENCWG to manage the technical aspects of the contract (acceptance tests, etc.) and make these datasets available. Ongoing.

HSSC9/22 ENCWG to identify the individual components in S-57 (file size, etc.) that prevent ENC Producers from providing high density contour lines and propose subsequent recommendations. Ongoing. (See papers 5.2 and 5.2.1). **UK to lead a Sub-WG to draft a new section of S-65 that will include production and maintenance guidance. Chair to propose to HSSC10 that it should be an Annex to S-65. ACTION – see Agenda item 5.2.**

HSSC9/23 In the IHO CL reporting on the outcome of HSSC-9, IHO Sec. to invite IHO MS to include more contour lines in their ENCs, as appropriate. Ongoing.

HSSC9/36 NIPWG, NCWG, ENCWG, HSPT to provide their initial comments on the draft Publication S-67 to the DQWG. Completed.

HSSC9/47 HSCC tasked the S-100WG/ENCWG to continue monitoring the development of guidance on cyber security and provide advice on appropriate actions in relation with the development of the S-100 data protection scheme. Ongoing.

HSSC9/59 S-100WG/ENCWG to submit a proposal opening the possibility of establishing G-series in the list of IHO Publications, for guidelines, and guidance documents. Completed. (Chair to present to HSSC10).

### 3.4 DQWG Report

As there was no DQWG representative, JW (who attended the 13<sup>th</sup> DQWG meeting) reported that there were discussion on the data quality related Meta features in S-57 and S-101. Changes have been made to some of the encodings for S-101. There was a discussion on quality of swept areas. The WG has also developed a generic data quality check list which is based on the ISO 19158 standard. The meeting acknowledged that the symbolization of data quality in ECDIS was not good and needed to be improved.

FR reported that they had reviewed S-67 and they were not in agreement with much of the content. JW reported that this sentiment was in line with most of the feedback provided and the document will go through another review cycle. One of the actions from last year was to issue a CL asking HO's to populate CATZOC in ENC's. He reported that there will be a new category of "Oceanic" CAZOC classification in S-101 for areas deeper than 200 meters. This will not impact on S-57 ENC's.

FR stated that CATZOC = U is still being populated by many HO's. Both charts and ENC's should include the same CATZOC information. The next DQWG meeting will be at the IHO Sec from 5-8 February 2019.

### 3.5 NCWG Report

MH reported on the NCWG activities and outlined the changes to S-4 that will have an impact for ENCWG. S-4 Edition 4.7.0 was approved in 2017 and Edition 4.8.0 is to be submitted for HSSC10 for endorsement. New changes have been made and include: Extended use of 'yacht' symbol; New islet symbol; Magnetic variation; and Planes of reference. The clause on LORAN has been removed. Changes have also been made to S-4 Part A. The WG have issued a clarification on the colour used for floodlighting. This will require new text to be inserted in the UoC. S-11 Part A - Edition 3.0.0 was published, June 2017. A new section 200 was included that provides guidance on ENC scheming.

The future of the paper chart paper is in progress – to be completed for HSSC11. Guidelines for "Rule-based cartography" are being developed. MH requested the meeting to consider what possible amendments will be needed in the S-57 UoC, taking into account the reported NCWG activities.

### 3.6 IEC Report

HP noted that IEC 61174 Edition 4 refers to S-57 and S-52. The next edition of 61174 is proposed for release by 2020 (FDIS stage). Items that IEC TC 80 are working on include: cyber security requirements (for 2021); data quality; and a review of the implications of the implementation of S-10x Product Specifications. He displayed a check list of items for S-1XX products that should be considered in S-101, S-102, etc. for inclusion in a future edition of 61174. In addition to data quality issues, the TC 80 is also looking at software quality assurance for both ECDIS software and for the data (ENC) i.e. after validation there is a need for an authentication mechanism. IEC are also working on a route exchange product specification.

He proposed that an item for the next stakeholders meeting, should be to solicit feedback on what the marines views are on the content and format of Digital Nautical Publications.

#### **4. ENCWG Documents and Work Activities**

The Chair provided a brief status of the publications for which the WG is responsible:

##### 4.1 S-52 - Specifications for Chart Content and Display Aspects of ECDIS

Clarification Edition 4.0.2 of the PL was released in 2017.

##### 4.2 S-57 - IHO Transfer Standard for Digital Hydrographic Data

No new editions released since the last meeting.

##### 4.3 S-58 - Recommended ENC Validation Checks

Edition 6.1.0 in preparation for release.

##### 4.4 S-62 - List of Data Producer Codes

Ongoing update of the producer code database. The DB application is being transferred to the new Registry.

##### 4.5 S-63 - IHO Data Protection Scheme

No changes since the last meeting.

##### 4.6 S-64 - IHO Test Data Sets for ECDIS

Edition 3.0.2 containing clarifications was released in July 2017.

##### 4.7 S-65 - ENCs: Production, Maintenance and Distribution Guidance

Edition 2.1.0 containing corrections and clarifications was released in May 2017.

##### 4.8 S-66 - Facts about Electronic Charts and Carriage Requirements

Edition 1.1.0 containing corrections and clarifications was released in January 2018.

##### 4.9 Updates to the IHO webpage ENCs, ECDIS and S-100

Chair reported that some changes had been made to improve access to ENCWG information and documents.

#### **5. ENCWG Proposals**

##### 5.1 Improvement of ENCs Display on ECDIS

CM reported that 43 individual and 22 organizations had registered on the basecamp. The PT has collected ECDIS screenshots, based on the S-52 Presentation Library, Edition 4.0.2. He presented the findings of the SubWG and noted that there were a number of items that will be passed onto the S-100WG (and S-101PT) for action/discussion.

HP proposed that if there is a desire to produce a new edition of S-52, it is very important to first consult the ship owner organizations. RF noted that the WG must be able to demonstrate significant improvements in order to motivate any change to the standard. MD – there should be a systematic way of getting feedback from the end user (mariner). HP agreed that bigger screen size and higher

resolutions could significantly improve presentation of information in ECDIS. The meeting noted the report and commended the progress made.

## 5.2 High Density Bathymetry in ENC's

The Chair noted that HSSC 8 had tasked the ENCWG to investigate the possibility of creating a new Bathymetric ENC overlay standard. This was discussed at the ENCWG2 meeting however consensus could not be reached. He noted that the WG needed to provide guidance for HO's on how to produce bathymetric ENCs using the current ENC standard. More detailed bathymetry in ENCs would enable greater refinement in setting the 'safety contour' which would allow better route planning and should enable ship operators to get more cargo in and out of ports. He reported on the UKHO experience and noted that Caris have improved their contour generation algorithm which has resulted in better contouring results and faster processing time. One of the main issues identified from their automated contour generation algorithms include multiple small shoals, which need to be combined into a single large shoal. PP reported that Canada have also carried out test in very dynamic (sandbank) areas and had encountered similar issues. The Chair requested comment on whether any problem had been experienced loading cells larger than 5 Mb. HP proposed that this would not be a problem, however ECDIS producers would need to conduct their own internal tests. RF noted that the physical size of cells will have an effect on the distribution channels. HB proposed that there may also be some issues for the ECDIS display and this will require further testing.

The Chair invited the meeting to review the issues raised that need to be considered and addressed when creating High Density Bathymetric ENCs. Based on this feedback the WG should compile some recommended best solutions, for discussion at the next meeting.

EH (DK) – stated that Denmark are also working on automated contour generating methods for inclusion in ENCs and would be happy to share their experiences. **(See actions).**

### .2.1 High Density Bathymetric ENCs - AHO Approach

AS reported that the AHS has been testing the inclusion of high resolution contours in ECDIS for some time. They have concerns that the use of a proprietary format will create a situation whereby the ship's Pilot has a considerably different view of the navigation situation compared to the vessel's Master. The AHO has succeeded in demonstrating that High Density Bathymetric ENCs can be created and maintained in S-57 format using new tools for generating contours. As part of this investigation, they have consulted with stakeholders to get feedback. RF noted that it would be important to test the ENCs with different ECDIS. MD noted that there is a need to ensure that the high density bathymetry ENCs are based on recent and accurate survey data. The meeting noted the report.

### 5.2.2 Minimum size of Isolated Shoals

AS proposed that the minimum size selected for isolated shoals impacts on how production tools generalise and smooth the entire bathymetric surface used as the basis for automatic contour generation. This parameter affects how much other contours are 'pushed out' from their 'true' position. A compromise is necessary in order to enlarge isolated shoals to a point they are visually detectable without degrading the rest of the bathymetric contours to an unacceptable level.

The meeting noted the recommendations in the paper and agreed that they should be presented to the next NCWG, for discussion and the inclusion of guidance in S-4 (and also possibly in the S-57 UoC). **(See action).**

## 5.3 S-58 Machine Readable Version

SS proposed that it would be beneficial to produce a machine readable version (preferably .csv format) of S-58 Validation Checks. He proposed that it would be easier for the IHO to maintain the list of checks in such a resource format, and easier for software manufacturers to implement them. FH noted that the logic in the publication is quite difficult and the content would need major restructuring in order to make it suitable for outputting a machine readable version that could be used for machine readable input. TP noted that some of the sub-tables contained mixed data types and it would be difficult to make a completely machine readable output, however there would be benefit to including the content into a database and generating the publication from this. **(See action)**.

#### 5.4 S-52 ECDIS Chart 1 Issues

The Chair noted that the Chersoft paper proposed that in cell AA4C1XMS there is a M\_QUAL feature with CATZOC=3 which covers the whole cell apart from the top left dashed rectangle shown in the Depths, currents, etc. tile. This dashed rectangle is also a M\_QUAL feature but with CATZOC=1. This feature was not present in the first distribution of Ed 4.0.1 of the S-52 Presentation Library from which the screenshots were derived.

The changes were made to the cells during the meeting by TR. **(See action)**.

#### 5.5 M\_QUAL over UNSARE from DQWG

The Chair reported that the DQWG recommends that ENCWG agree to add the following paragraph in the remarks section of section 2.2.3.1 Quality of Bathymetric Data in the Use of the Object Catalogue. *“When an UNSARE area is used and within the entirety of that UNSARE no bathymetric features are encoded, a M\_QUAL is not required”*.

He noted that the DQWG also recommended that an Encoding Bulletin be released by the ENCWG on this issue.

The meeting noted the paper and the recommendation to produce an Encoding Bulletin on the use of M\_QUAL covering UNSARE where no bathymetric features are encoded. **(See action)**.

#### 5.6 Issues with CATZOC = U

The Chair reported that there are currently 16,097 cells commercially available within AVCS portfolio. Of these cells it was found that 38% of the current ENCs available were encoded with a CATZOC value of U. He invited the meeting to consider if there are any other actions the ENCWG can take to encourage MS to populate CATZOC with meaningful values.

He also highlighted an issue of inconsistent encoding of quality information between data producers in boundary areas. This is resulting in an unsatisfactory presentation for mariners. Mariners need to know what uncertainty they should apply to their under keel depth based on the quality information. TR reported that IC-ENC had noticed a marked improvement from many data producers.

##### 5.6.1 DQWG Letter 2/2018 - Methodology for the Display of Quality Information

The Chair reported that HSSC assigned action 35 to the DQWG “to develop the conditional visualisation methodology of quality of bathymetric data in liaison with NCWG, NIPWG, ENCWG and S-101PT”.

He recommended that the ENCWG review the draft paper that had been produced and add new content where necessary. He proposed that the WG needs to consider the DQWG recommendations, but care should be taken to not over-complicate the display of quality information making it more

difficult for the mariner to interpret. He proposed that some of the issues will be discussed under the high resolution bathymetric contour agenda item.

HP proposed that data quality information is used in planning mode, and striving to make data quality information too prominent in the operational mode will be confusing for the mariner. He suggested that there should be better selection criteria (switch on/off) for quality symbols in operational mode i.e. while underway.

The Chair reported that paper DQWG14-08A had been presented and discussed by the 14th DQWG meeting. He noted that, although it will not be possible to make any significant changes for S-57, the new quality model provides better options for HOs to encode quality information in S-101 ENCs. It also provides better mechanisms to portray quality information in ECDIS.

#### 5.6.2 DQWG14-08A - Methodology for the Display of Quality information

The Chair reported that the HSSC9 meeting had tasked the Data Quality Working Group to develop guidance on improving the conditional visualization methodology for quality of bathymetric data. This work is to be done in liaison with NCWG, NIPWG, ENCWG and S-101PT. Paper DQWG14-08A, (submitted to the 14 DQWG) provides an initial scoping of the shortcomings with the current methods, and proposes new datamodel for use in S-101 ENCs, and gives more and better options for HOs to encode data quality information. He invited the meeting to review the major differences between S-57 M\_QUAL and S-101 M\_QUAL which include new attributes for data assessment and category of temporal variation. The meeting noted the DQWG paper.

#### 5.7.1 T&P Information in ENCs

The Chair reported that HSSC assigned action 28 to the ENCWG and NCWG to develop guidance for HOs to enable the correct encoding of temporary and preliminary paper chart Notices to Mariners in ENC. He noted that INTERTANKO had reported that ENC producers do not create equivalent paper chart T&P updates for their ENCs. A draft paper had been submitted to HSSC10 on this topic.

RF noted that the draft document does not focus on when to issue T&Ps. He stated that there needed to be better guidance for HOs as to when they should issue T&P NtoM equivalence ENC updates, and proposed that the document needs more work, and it also needs to be reviewed by the NCWG. MH agreed and questioned who the document is intended for? He asked whether the document would be ready for the HSSC10?

TR reported that feedback received at the IC-ENC Steering Committee is that the number of data producers that are no longer issuing T&P NtoM equivalent ENC updates had significantly reduced. (**See action**).

#### 5.8 S-63 Template for the README.TXT file

INTERTANKO proposed having an Initial (base) readme file which would contain the standard information that is currently repeated in every update file.

PRIMAR noted that they agreed with the proposal in principle but suggest that this was not the best mechanism; a better solution should be investigated.

HB proposed that it's only a local file that gives information about the exchange set and it does not provide any information for the mariner. He noted he was not in favour of changing this for S-57 ENCs and reminded the meeting that S-100 already caters for this in the exchange set metadata.



The Chair stated that something needs to be done about improving the structure of the information contained in the readme.txt file. Both RENCs agreed to work together to come up with a proposed solution for presentation at the next meeting. **(See action).**

#### 5.8.1 S-63 Extensions Required for Authentication

HP proposed that there is a need to create new revised Edition (1.3.0) of S-63 to address deficiency in the authentication of all data files. He stated that the calculation of signatures should be based on the same private key as the signatures already used and proposed that a new edition should be prepared for release in 2019. SS noted that, considering the time taken for customers to move to S-63 Edition 1.2, 2019 might not be achievable.

The Chair noted that, if there is need to publish a new Edition, manufacturers will need to update their systems. He questioned what the impact for data distributors will be?

HP noted that to implement option 9a of the proposal will have a bigger impact for change but will be more efficient. Option 9b will have the least impact, but will have a bigger impact on the system.

The Chair stated that, before work starts on this item, there need to be clear indication from industry to establish if this is a really a requirement. Furthermore there needs to be clarity on how can ancillary files be protected and authenticated.

HB proposed that to minimise the impact, provision should be made to sign the catalogue and catalogue.txt files only. The CRC values should be used to check that .tiff and .txt files have not been altered. This was agreed by the meeting. **(See action).**

#### 5.9 Anchoring Symbol Instructions

The Chair reported that Geomod had provided a paper on a portrayal conflict on the anchorage area symbol instructions. HP proposed that a single ACHARE will get 2 symbols. The reason is that two symbols are called – i.e. ACHARE51 and RESTRN01. The attribute CATACH = 8 provides the condition. He stated that in order to change this, there will be a need to produce a correction, which will result in a new edition and retype approval of ECDIS. He proposed that this could be as a result of illogical encoding.

The meeting noted that paper and agreed that additional guidance needs to be drafted. **(See action).**

#### 5.10 Proposal to Display Active Submarine Volcanos

MD reported that the AHO currently encodes volcanos as OBSTRN point features and the whole area is covered by a CTNARE area feature. He proposed that the Object Catalogue could be expanded to include a new CATOBS attribute and requested the WG to consider what changes to the current S-57 and S-52 standards are required to better encode/portray submarine volcanoes. He noted that the symbol currently being used does not reflect the potential dangers associated with submarine dangers and noted that there is often inadequate MSI regarding these features.

HP proposed that undersea volcanos could be more prominently displayed if they were encoded as area objects. **(See action).**

#### 5.11 Use of Big Format Monitors for ECDIS

HP reported that ECDIS monitors have been as small as possible due to high price of complying with IEC 60945. Due to the reduction in equipment costs, high resolution big monitors which offer better usability for viewing are increasingly being used. He proposed that the test descriptions in S-64 should

be amended to allow all acceptable pixel sizes of a monitor intended for use by and ECDIS. S-52 allows larger pixel size than 0.3 mm as long as the result meets the specified requirements. He invited the ENCWG to either agree to add a new clause 1.11 into the S-64, or formulates a plan to amend S-64 for submission the HSSC-11 meeting – (May 2019). Furthermore, he invited the meeting to add a proposed new clause 1.11 into the S-64 or add a work item to draft changes of the S-64 – for endorsement by HSSC-11. The meeting agreed that feedback should be sought from industry. **(See action).**

TR proposed to include a graphic against clause 1.11. He reported that large monitors are a reality, and S-64 needs to be updated to reflect this reality. He stated that the WG need to investigate what changes are required with a view to producing a new editions of S-52 and S-64. **(See action).**

#### 5.12 Comments on Chersoft paper about ECDIS Chart 1

The Chair reported that the proposal to change from “Chart Legend” to “legal ENC chart” has introduced some unknown issues. For example, legal ENC charts require that quality (M\_QUAL) is specified. Chersoft have proposed that the viewing group for M\_QUAL should be turned off. HP noted that the issues reported by Chersoft concerning symbols, may be a problem with their implementation as this had not be reported by any other SW manufacturers. He noted that most of the issues relating to the screen shots could be easily rectified and he would be happy to provide updates. The meeting agreed that there is a requirement to create a new Edition 6.1.0 of S-52. **(See action).**

#### 5.14 Loxodrome

HP reported that S-57 does not provide much information on what method should be used to join the spatial points i.e. by loxodromic or by orthodromic. HB reminded the meeting that there had been a discussion on this at a previous meeting and the maintenance document 8 states that two vertices must be joined by a loxodromic line. Polar areas are more complex. Polar projected vertices do not draw loxodromic lines as straight lines. He proposed that advice should be provided in S-52 on loxodromic lines. FH proposed that there should be two solutions; one include additional vertices so that edges are portrayed correctly or; two enable the ECDIS to insert the extra points automatically. **(See action).**

### 6. General Topics [Mellor]

#### 6.1 Outcomes from IMO – NCSR

The Chair reported that one of the main items that were discussed at the IMO NCSR meeting was the development of a Standard (S) Mode of operation for ECDIS (reported under agenda item 7.1).

#### 6.2 New category for Guidance “G” document series

The Chair reported that the ENCWG and S-100WG undertook an action (at the HSSC9 meeting) to write a joint proposal for a new series of Guidance (G) documents that would complement the existing categories, and would have a less restrictive maintenance regime. A proposal had been prepared for submission to the HSSC-10 meeting.

### 7. Any Other Business

#### 7.1 ECDIS S-Mode

Nick Lemon, IMO coordinator on S-mode, presented the work done to date and the concept of using icons for standard functions.

He reported that one of the main aims of the S-Mode work is to try and converge the way that manufacturers implement their GUI's. A standard set of icons have been developed that could be used for various ECDIS operations. Through CIRM it has been possible to develop a guideline document which will be submitted to NCSR 6. This should lead to the improvements in the standardization of ECDIS operation and training. He invited the WG members to participate, and provide feedback. HB proposed to not use icons, but to use standardised human language. **(See action).**

## 7.2 Information about S-421 Route Plan exchange

HP reported on the IEC work to develop a format for Route Exchange which is expected to be available in 2021. He noted that the specification will use the "RTZ", file format. The S-421 number has been assigned to the Product Specification. It is anticipated that there will also be an extension to cover all requirements of IMO voyage plans.

## 7.3 Other issues not included in the Agenda

Use of CSCL and M\_CSCL: AS reported that ENC display sub-WG identified that further guidance was needed on the use of CSCL and M\_CSCL. AHO have started to include larger compilation scale areas in ENCs to improve the user experience. Following some tests, they have identified some problems with the S-57 to S-101 converter. He proposed that the M\_CSCL objects are not being encoded consistently by data producers. This could impact on the way ECDIS presents the overscale pattern, overscale indication, and the larger scale boundary. The meeting agreed that the issue needs further investigation for S-57, and should be forwarded to the S-101PT, and for consideration for data converter. TdP reported that there is an xml override file that allows for better conversion of M\_CSCL. **(See action).**

Holes in ENCs: HB reported that in spite of the clause in the UoC prohibiting holes in cells, their distribution service is still finding cells that include the original problem. Data producers are getting around the prohibition by creating a corridor to the hole thus bypassing the rule. This leads to a number of display issues. The recommendation is that the rule in the UoC should be expanded to provide further clarity in order to improve encoding practices.

IC-ENC reported that they do provide advice about this problem and the negative impact that it is having, however data servers consider that they are not contravening the UoC guidance. **(See action).**

Chart -1 – Display of date dependent objects in ECDIS: HB note that the guidance provided for using Chart 1 was just to check that the ECDIS is displaying information properly, however PSI are using it to inspect ECDIS functions i.e. for items that they are not expected to do.

TM noted that the Chart 1 was not intended for PSI inspection and noted that he agreed with the recommended change.

It was agreed to remove the condition mentioned above and instead add "Some ECDIS may require the date range to be set between 01.04.2014 and 27.08.2014 ". **(See action).**

## 8. Review of Meeting Actions

The meeting reviewed the meeting actions.

## 9. Date and Venue of Next Meeting

Following an offer from France to host the next meeting, it was agreed that the next meeting would take place at the IHO Secretariat in Monaco, in conjunction with the next S-101PT meeting.

**10. Election of ENCWG Chair and Vice Chair**

The IHO Secretariat reported that, following every normal Assembly, Committees and Working Groups are obliged to carry out an election for office bearers. He reported that the only nominations for Chair was the Thomas Mellor (UKHO). The serving Vice Chair Miko Hovi stated that he would not stand for re-election and Richard Fowle (Denmark) was therefore elected as the Vice Chair.

**11. Close of Meeting**

The Chair thanked all members for the participation and contribution the meeting. On behalf of the entire WG, he expressed his sincere appreciation for the excellent meeting venue, warm hospitality and great support provided by the Australian Hydrographic Service.

## Action Items

Para #	Action #	Action	Who
5.2	1	Sub group to be formed in order to provide a guidance document on how to produce and maintain bathymetric ENCs. Need to take account of different geographical areas. (Note: as this was proposed by Germany, consider inviting them to join the group).	UK, Aus, Denmark, Canada, USA, Norway, Germany
5.2	2	Report the discussions on bathy ENCs to the HSSC10 meeting and recommend that a sub WG is formed to draft guidance text – for inclusion as an Annex to S-65.	Chair
5.2.2	3	Present the issues relating to contour generation and the minimum size of shoals (paper 5.2.2) to the NCWG for discussion and possible action in S-4 and the S-57 UoC. (AHS)	AHS
	4	Investigate whether it is possible to convert the S-58 publication into a database and include functions to output its content in pdf formats. (TP)	TP
5.3	5	Generate new Chart 1 screenshots to include M_QUAL changes to cell AA4C1XMS and include in S-64 document.	HP / JW
5.5	6	Issue an Encoding Bulletin for the use of UNSARE in areas where no bathymetric features are encoded.	JW
5.7.1	7	Add relevant content from S-4 (B-600 and B-400) into the draft T&P document. Higher level advice (content) to be compiled and included for PSI and marines.	Chair and MH
5.7.1	8	Add extra guidance to the UoC to provide advice for HO's on when and how to encode T&P information.	CM, RF
5.8	9	Produce guidance on a standard structure for the content of the readme.txt file (to be added to S-63)	RENC's
5.8.1	10	Provide a report to HSSC10 on the discussion to extend S-63 to cover signing the catalogue.031, product.txt etc ...	Chair
5.9	11	Draft additional guidance on the encoding of anchorage areas for inclusion in the UoC (ref paper ENCWG3-5.9). For consideration at ENCWG4.	TR
5.10	12	For undersea volcanos, amend the UoC to add an area obstruction object with a caution area covering the extent of the toxic emission area. This should advise on the inclusion of the additional .txt and .tiff files.	AS/JW

5.11	13	Request feedback from industry on the use of large format monitors. Present the issue on large format monitors to the next CIRM meeting for feedback. Prepare clarification text for inclusion in S-52 and S-64 .	HP/TM
5.11	14	Send out a proposal to OEMs to get feedback on proposed changes to S-52 / S- 64 drafted for large format monitors.	Chair
5.12	15	Produce clarification edition of S-52 taking into account Chersoft and Furuno comments relating ECDIS Chart 1.	JW
5.14	16	Prepare a clarifying note on the use of loxodromic lines (see MD 8) for inclusion in the next Editions of S-64 and S-52 (for consideration by ENCWG4).	Chair
7.1	17	Consider what additional ENC related icons are needed to be added to the S-Mode work. TM and HP to propose S-52 symbols.	TM/HP
7.3	18	Prepare paper on M_CSCL for discussion at the next S-101PT, and NCWG meetings.	AS
7.3	19	RENCs to remind data producers about rules in UOC. TM to report issue back to UKHO.	Chair
7.3	20	Change the PSI advisory document concerning the use Chart 1 (as proposed in the paper ENCWG3...), and send the updated document to the relevant inspection MoU's.	Chair

## Agenda

Document Number Prefix	Agenda Item	Agenda Item / Document Title	
1. Opening and Administrative Arrangements			[Mellor]
ENCWG3	1.1	List of Documents	
ENCWG3	1.2	List of Members and Meeting Participants	
ENCWG3	1.3	ENCWG ToRs	
ENCWG3	1.4	S-100WG - Work Plan and Future Meetings	
2. Approval of Agenda			
ENCWG3	2.1	Agenda	[Mellor]
3. Matters Arising, HSSC Items and Other WG Reports			
ENCWG3	3.1	Approval of ENCWG2 Minutes	
ENCWG3	3.2	Review ENCWG2 Actions	
ENCWG3	3.3	Decisions and Actions from HSSC9	[Mellor]
ENCWG3	3.4	DQWG Report	[ ]
ENCWG3	3.5	NCWG Report	[ ]
4. ENCWG Documents and Work Activities			
ENCWG3	4.1	S-52 - Specifications for Chart Content and Display Aspects of ECDIS	
ENCWG3	4.2	S-57 - IHO Transfer Standard for Digital Hydrographic Data	[ ]
ENCWG3	4.3	S-58 - Recommended ENC Validation Checks	[ ]
ENCWG3	4.4	S-62 - List of Data Producer Codes	[ ]
ENCWG3	4.5	S-63 - IHO Data Protection Scheme	[ ]
ENCWG3	4.6	S-64 - IHO Test Data Sets for ECDIS	[ ]
ENCWG3	4.7	S-65 - ENCs: Production, Maintenance and Distribution Guidance	[ ]
ENCWG3	4.8	S-66 - Facts about Electronic Charts and Carriage Requirements	[ ]
ENCWG3	4.9	Updates to the IHO webpage ENCs, ECDIS and S-100	[ ]
5. ENCWG Proposals			
ENCWG3	5.1	Improvement of ENCs display on ECDIS	[ Mouden]
ENCWG3	5.2	High Density Bathymetry in ENCs	[Mellor ]
ENCWG3	5.2.1	High Density Bathymetric ENCs - AHO Approach	[Sanchez]
ENCWG3	5.3	S-58 Machine readable version	[Skjæveland]
ENCWG3	5.4	S-52 ECDIS Chart 1 Issues	[Chersoft]
ENCWG3	5.5	M QUAL over UNSARE from DQWG	[Mellor]
ENCWG3	5.6	Issues with CATZOC = U	[Mellor]
ENCWG3	5.6.1	DQWG Letter 2/2018 - Methodology for the display of quality information	[Mellor]
ENCWG3	5.6.2	DQWG14-08A - Methodology for the display of quality	

		information	[Mellor]
ENCWG3	5.7.1	T&P Information in ENCs	[Mellor]
ENCWG3	5.7.2	T&P NM information in ENCs	[Mellor]
ENCWG3	5.8	S-63 template for the README.TXT file (Intertanko)	[Mellor]
ENCWG3	5.8.1	S-63 Extensions required for authentication	[Peiponen]
ENCWG3	5.9	Anchoring Symbol Instructions	[Geomod/Mellor]
ENCWG3	5.10	Proposal to display active submarine volcanos	[Sanchez]
ENCWG3	5.11	Use of Big Format Monitors for ECDIS	[ Peiponen]
ENCWG3	5.12	Comments on Chersoft paper about ECDIS Chart 1	[ Peiponen]
ENCWG3	5.13	Issues.on.S-64.Ed.3.0.2	[ Peiponen]
ENCWG3	5.14	Polar areas and how to join spatial points	[ Peiponen]
6. General Topics			[Mellor]
ENCWG3	6.1	Outcomes from IMO - NCSR	□
ENCWG3	6.2	New category for Guidance “G” document series	[Mellor]
ENCWG3	6.3		□
7. Any Other Business			[Mellor]
ENCWG3	7.1	ECDIS S-Mode	□
ENCWG3	7.2	Information about S-421 Route Plan exchange	[ Peiponen]
8. Review of Meeting Actions			[Mellor]
9. Date and Venue of Next Meeting			[Mellor]
10. Election of ENCWG Chair and Vice Chair			[OHI Sec]
11. Close of Meeting			[Mellor]



## Annex C

### List of Participants

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