

# 4<sup>th</sup> ENC STANDARDS MAINTENANCE WORKING GROUP MEETING (ENCWG)

10 -12 June 2019  
IHO Secretariat, Monaco

## Draft Minutes Ver 1.0

### 3.1 Approval of ENCWG3 Minutes

The ENCWG 3 Minutes were approved by the meeting.

### 3.2 Review ENCWG3 Actions

1 - Sub group to be formed in order to provide a guidance document on how to produce and maintain bathymetric ENC's. Progress has been made – presentation to a workshop – covered in more detail later in the week (Complete)

2 - Report the discussions on bathy ENC's to the HSSC10 meeting and recommend that a sub WG is formed to draft guidance text—for inclusion as an Annex to S-65. Reported to HSSC (Complete).

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 (Presented to NCWG - ongoing) (Complete).

4 - Investigate whether it is possible to convert the S-58 publication into a database and include functions to output it content in pdf formats. (TP) (Ongoing).

5 - Generate new Chart 1 screenshots to include M\_QUAL changes to cell AA4C1XMS and include in S-64 document. HP / JW (Ongoing).

6 - Issue an Encoding Bulletin for the use of UNSARE in areas where no bathymetric features are encoded.JW5.7.1 (Completed)

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 MH5.7.1 (???)

8 - Add extra guidance to the UoC to provide advice for HO's on when and how to encode T&P information.CM, RF5.8 (Ongoing). (Complete)

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 (Completed).

10 - Provide a report to HSSC10 on the discussion to extend S-63 to cover signing the catalogue.031, product.txt etc ...Chair5.9 (Completed)

11 - Draft additional guidance on the encoding of anchorage areas for inclusion in the UoC (ref paper ENCWG3-5.9). For consideration at ENCWG4.TR5.10 (Complete)

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 give advice on the inclusion of the additional .txt and .tiff files.AS/JW (Completed)

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/TM5.11 (Ongoing).

14 - Send out a proposal to OEMs to get feedback on proposed changes to S-52 / S-64 drafted for large format monitors. Chair5.12 (Completed)

15 - Produce clarification edition of S-52 taking into account Chersoft and Furuno comments relating ECDIS Chart 1. JW (Ongoing)

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). Chair7.1 (Should be completed by end of week). (Complete)

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/HP7.3 (Completed).

18 - Prepare paper on M\_CSCL for discussion at the next S-101PT, and NCWG meetings. AS (Complete).

19 - RENCs to remind data producers about rules in UOC. TM to report issue back to UKHO. (Completed).

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 (Completed).

### 3.3 Decisions and Actions from HSSC11

HSSC11/04 - ENCWG and S-100WG to monitor any possible impact of the work on the agreed e-navigation outputs on ECDIS related standards and S-100 related standards respectively. (Ongoing).

HSSC11/06 - T&Ps for ENCs – proposal prepared by IHO Sec to be considered by NCWG and ENCWG. (???)

HSSC11/30 - 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. (Complete).

HSSC11/31 - clarifications for S-52, S-63 and S-64 standards ... (Completed)

HSSC11/32 - HSSC endorsed the proposed revision to the S-57 UOC (see also Action HSSC11/42 on MARPOL). (Complete)

HSSC11/32 - IHO Sec to inform the IHO Member States that S-58 datasets that are planned to come into force on 1 Sep 2019, are now available. (See paper - ...) (Completed).

HSSC11/42 - Based on HSSC11-05.1G refers, ENCWG (in liaison with NCWG1) to consider the possibility of developing an S-57 UOC covering MARPOL regulations, and its applicability to different scale bands. (Complete for S-57 and S-101)

HSSC11/70 – ENCWG to develop a draft proposal for mitigation measures for cyber security, to liaise with the CIRM Cyber Risk Management WG/IEC and make an impact assessment and further investigations, so HSSC can consider the need for updating S-63. (Ongoing)

### 3.4 HSSC Action 11/06 –Equivalent T&P NMs for ENC's

Director AK reported on the revised document that provides advice to port state inspectors. Chair invited members to provide comment during the meeting after which it will be accepted. YB – change “office” to hydrographic “authority”.

### 3.5 DQWG Report

JW reported on behalf of the DQWG Char. Noted that MS had been requested that members provide their national methodologies for defining CATZOC from surveys. He invited the meeting to note the Validation Checks developed for S-127, and requested members to provide Test Data for testing the new methodology by 15 July 2019.

The meeting noted the report.

***See actions.***

### 3.6 NCWG Report

NCWG Chair reported that the WG had done some work on anchor berths, how to include information about the availability of larger scale ENC's. Floodlight – symbol refined, worked with ICPC – on how to chart submarine cables and developed guidance on how to chart satellite derived bathymetry. Will submit paper to S-101 on solar parks. Fin and UK are developing a proposal on pilot boarding place.

Carrying out a survey on paper chart production plans by MS hydro offices.

RF proposed that there need to be better guidance to encoders on what triggers alarms in an ECDIS.

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

4.1 S-52 - Specifications for Chart Content and Display Aspects of ECDIS  
Latest edition - Ed. 6.1(.1) - October 2014 - With Clarifications up to June 2015

4.2 S-57 - IHO Transfer Standard for Digital Hydrographic Data  
Main document - November 2000

4.3 S-58 - Recommended ENC Validation Checks  
Chair noted S-58 Ed. 6.1.0 – Critical checks - mandatory from 1 September.

4.4 S-62 - List of Data Producer Codes  
Preparations to be moved to the Registry.

4.5 S-63 - IHO Data Protection Scheme  
IHO Sec making preparation to administer S-100 Part 15.

4.6 S-64 - IHO Test Data Sets for ECDIS

4.7 S-65 - ENC's: Production, Maintenance and Distribution Guidance

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

4.9 Updates to the IHO webpage ENC's, ECDIS and S-100  
Ongoing.

## **5. ENCWG Proposals ENCWG4**

### 5.1 Reported inconsistency -S-52 Pres Lib 4.0.(1)

TimeZero development team proposed that in S-52 Presentation Library Edition 4.0(.1), Part I, Appendix C, it appears that the viewing group for the default BRIDGE should be changed from 21 to 26.

Decision: Do not change the file, but change the printed document to agree with the machine readable file (i.e. move BRIDG from view group 26 to 21).

**See actions.**

### 5.2 Error in Presentation Library Edition 4

Teledyne CARIS proposed that an extra field was found in the DAI file for the CHRVID01, CHDATD01 symbols and CHRVID02 line-style.

Decision: agreed that the .dai file needs to be corrected.

**See actions.**

### 5.3 S-52 ECDIS Chart 1 Issues

Outstanding action which is currently being worked on.

#### 5.4A UOC Revision to Reflect Changes in S-52 Edition 4.0

The Chair reported that the symbol instruction for anchorage areas within the Pre Lib 3.4 did not permit the text from the object name to display on the ECDIS screen. The UOC recommended to encode of sea areas using the same geometry so the anchorage name would display without the need to perform a pick report. Pres Lib Ed 4.0 addressed the issues and appropriate changes need to be reflected in the UOC.

Recommended that:

- that HO's remove named sea areas covering anchorage,
- the 2nd Remarks bullet related to double encoding of SEAARE in UOC clause 9.2, anchorages and prohibited/restricted anchorages; moorings be deleted.
- the advice in the UOC at clause 2.5 be updated to reflect this change
- a review the UOC be undertaken for encoding that were designed to reduce alarms in ECDIS
- prepare a new "Revision edition" of the UOC.

Decision: The meeting agreed the proposed changes and that they should be included in the new edition of the UOC under preparation.

RF – need to provide additional encoding guidance to prevent double encoding.

**See actions.**

#### 5.4B Changes to UOC 4.1.0 due to discrepancies with S-52 PL4.0.2 [Sanchaez]

Australia proposed that number of ENC display and ECDIS' alarm related improvements introduced by S-52 PL 4.0 (July 2017) had an impact on the content of S-57 Appendix B.1, Annex A (UOC).

Proposed the following changes to the UOC:

Changes to UOC for;

- 2.6.1.1 –1) third bullet point 2.6.2.2 –7.2.6.2.3 –8. & 11. b) 2.6.
- 6. 4.6.5 – Remarks second bullet point
- 6 – Remarks second bullet point
- 4.6.5 –Remarks second bullet point
- 4.8.13 –Remarks third bullet point
- 6.2.1 -

Decision: The meeting agreed the proposed changes in paper 5.4B. (HP to check 6.2.1. CSP to ensure that it is correct).

***See actions.***

#### 5.5 Proposal to Create a New ENC Distribution Protocol

MX reported that in order to overcome the inconsistencies with the distribution of ENC by different data providers, they have devised a way to integrate the data and permits from different DSPs so that it appears that they are from a single source. They propose to replace the ID of DSP's in the "SERIAL.ENC" and "PERMIT.TXT" files of the S-63 IHO Protection Scheme with a two-character Distributor ID.

CN requested that their proposal be considered for implementation for the next S-63 revision and for inclusion in S-101.

HP proposed that this type of service has already been implemented by many VARS. He proposed that there was no need to make changes to S-63. Creating new catalogue formats would require an S-63 update and this would require wide reaching ECDIS updates.

RS (Primar) noted that many of the existing RENCs / VARs have already implemented the proposal whereby distributors have developed dedicated services for different market segments. He invited CN should discuss with Primar as to how their proposal could be implemented without making changes to S-63. KHOA proposed that the paper should be reported to the WENDWG and the S-100WG. Primar reminded the meeting of the IMO maritime portfolios.

***See actions.***

#### 5.6 Blue Light in S-52 [Richardson]

IC-ENC reported that conditional a CSP is included in the S-52 Preslib Part I at 13.2.4 for the display of blue and yellow lights, is covered in the tables for the CSP but are not present within the associated diagrams. HG (7Cs) requested that the blue colour needs proper monitor calibration upgrades which will have a large implications for OEMs.

Decision: This will require an upgrade to the PL and to ECDIS systems. It was decided that the proposals should be forwarded to the S-101 for consideration.

#### 5.7 Naming of Beach Areas [Richardson]

IC-ENC reported that Section 14 of the UOC does not provide exhaustive guidance on how to encode names of all geographic phenomenon. They proposed that the guidance from the Aus HO be included in the next edition of the UOC. AS reminded that object name in coastline does not display in ECDIS. (Agreed).

***See actions.***

## 5.8 SCAMIN on Aggregations [Richardson]

IC-ENC proposed that checks should be included in S-58 for;

- each C\_AGGR which references NAVLNE AND RECTRC objects where the value of SCAMIN is not identical across all objects referenced. – **Proposal not agreed.**
- each C\_AGGR which references any of the following objects DWRTCL, DWRTPT, ISTZNE, PRCARE, TSELNE, TSEZNE, TSSBND, TSSCRS, TSSLPT, TSSRON where the value of SCAMIN is not identical across all objects referenced – **To hold in abeyance for the next edition – add to the list of proposals for next edition.**

**See actions.**

## 5.9 ENC containing too many Spatial References [Richardson]

Chair – on behalf of IC-ENC reported that they have received a number ENC cells with more than 12499 spatial components that are referenced by an object. Currently the only size restriction in S-57 and ISO 8211 is a maximum field length of 109-1 bytes. RF – noted that this issues had been dealt with before. See clarification in MD8. The proposal was not accepted.

IC-ENC propose that guidance be included in the UOC and a test be included in S-64 to ensure that ECDIS software are tested to ensure that they support objects with large numbers of references. A new S-58 check is included to detect records with more than 99,999 bytes.

**See actions.**

## 5.10 M\_QUAL on UNSARE with No Bathymetry (ENCWG3 Action 6A)

JW reported that is action from ENCWG3 (See paper ENCWG4-5.10 EB for UNSARE) – noted that the proposed EB 63 has been reviewed by the EB review group. Canada – will it affect the S-58 checks? JW should not invalidate and checks (in particular check 550).

**See actions.**

## 5.11 Consistent Use of Vertical Reference Datum in ENC

HG reported that S-57 and S-101 ENC product specifications define two types of vertical reference datum.

The recommended changes and additions to S-58 check 2000 were agreed.

Update the S-101 DCEG and S-101 Feature Catalogue so that the values for a Sounding Datum are constrained to those presented in table 2.2.

Update the encoding guidance for vertical reference datum within the S-57 Use of the Object Catalogue for ENC based on tables 1 and 2.3.

Amend S-58 with the modified check 2000 and the additions of checks A, B, C1 and C2.

**See actions.**

## 5.12 Actions from HSSC11 for ENCWG –MARPOL

The Chair reported that while the use of an ESSA to define MARPOL limits has not been considered safety related in the past, the call from industry to include the information in our ENCs is growing.

He invited the meeting to consider encoding them as Restricted Areas (RESARE), and / or as nautical publication information (M\_NPUB).

RF – had information from JP that indicated the baseline from which special areas are defined is most important. Antonio (Carnival) – supported the inclusion of baseline. They include the 4 mile limit included in the ENCs.

HP – if Restricted (RESARE) areas are to be used, they must be included on all usage bands.

Decision: It was decided that a Sub-WG should draft text on how to encode these for S-57 ENC – [JW, Canada, Norway, Seven-Cs. USA, TM, RF] To report back during the meeting.

#### 5.13 S-58 ‘Critical’ check test data [Fowle]

RF reported that the Critical checks” test data sets had been completed and circulated for review, noting that Edition 6.1.0 of S-58 will enter into force on 01 September 2019, after which Edition 5.0.0 will be retired (CL 47/2018). Invited the meeting to decide whether they should be included as; an Annex to S-58; a new standard (similar to S-64) or as a separate managed resource.

Decision: It was decided to publish it as a separate managed resource – using a Github repository. See Github paper 06.2.

#### ***See actions.***

#### 5.13A S-58 Proposed Changes [Skjaeveland]

SS (Primar) reported that S-58 checks 551a, 1512a and 1772b may need adjustments, and proposed some changes. Proposal was agreed for inclusion in the next edition. (1512a requires further discussion).

#### ***See actions.***

#### 5.13B S-58 Check 555 Proposed Changes [Skjaeveland]

SS (Primar) proposed to divide the check 555 into two new ones, 555a with category of ‘Critical’ and 555b with category ‘Error’ or ‘Warning’.

Decision: The meeting agreed that the proposal was for consideration for the next edition S-58.

#### 5.14 S-63 Readme.txt File [Skjaeveland]

SS reported that as a result of ENCWG3 action 9 requiring guidance for a standard structure for the content of the readme.txt file, RENCs have proposed guidance to be included in S-63. Action for ENCWG3

HG (SevenCs) noted that they are not happy for the readme file for conveying info to the mariner, as it is no longer available once the data has been read into the system.

Decision: The proposed changes to S-63 6.6 was accepted for action.

#### ***See actions.***

#### 5.15 Dangers highlighted by Sector lights intersections [Sanchez]

AS proposed that there should be a way of highlighting areas where sector lights intersect for a specific purpose (e.g. in the case to mark a ‘No GO’ area). This could be managed by ‘double encoding’ the ‘NO-GO’ area as an ‘independent’ CTNARE or RESARE object, and linking the feature

and the corresponding sector LIGHTS using an M\_ASSO Meta object. HP – proposed that this is not sufficiently ubiquitous to require the need for the proposed change. Should be implemented in S-101.

***See actions.***

5.16 Identification of areas with larger scale Paper Chart coverage [Sanchez]

AS proposed that ENCs should include a way to trigger an alert (or indicator) when it does not contain the largest level paper charts are available. He noted that this could be achieved by encoding a CTNARE area feature covering the region where larger scale paper chart products exist (even if they are from another country). The object must contain a text file reference populated using the attribute TXTDSC drawing attention to the larger scale paper chart/s.

HP – expressed doubt that this could be done on an international basis. TM – this should be the responsibility of a VAR or data server – i.e. they should inform the customer of larger scale charts.

Decision: There being no consensus – it was decided to not take the proposal forward.

5.17 DAYMAR and the double encoding of Base display objects [Sanchez]

AS proposed that DAYMAR is part of ECDIS Standard display and it shouldn't be treated differently to Beacons.

A DAYMAR object in the water with no overlapping Base display object shouldn't be considered as data which is unsafe for navigation' as defined in S-58 section 1.2 under 'Critical Error'.

Proposals to update S-57 Appendix B.1, Annex A UOC and S-58 check to 1775 to exclude DAYMAR objects and Downgrade S-58 check 54b from 'Critical Error' to 'Warning' and amend the wording of the check's message and solution as required.

RF reported that this test has been in previous S-58 editions, and this issue have not been reported before.

Decision: There being no consensus – it was decided to not take the proposal forward.

***See actions.***

5.18 ECDIS in-built safety functions performance vs Chart compilation practices [Sanchez]

AS reported that issues relating to chart compilation practices. It highlights a discrepancy between source data generalisation practices and ECDIS 'look ahead' and 'route check' in-built safety functions. The ability to zoom to over scale has possible impacts on safety of navigation.

JW – suggest to limit how far the mariner can over zoom. HP the real issue has to do with the ECDIS danger detection algorithm. A practical solution is to modify the UoC to include the dangerous point object should have a circle encode to be the same size as the actual point danger. The look ahead would identify the danger. FR noted this is more an ECDIS user problem, i.e. its inappropriate use.

***See actions.***

5.19 Editorial amendments to S-52 PL Ed 4.0(.2) Part I [Sanchez]

AS proposed the following amendments to Editorial amendments;



Reference not found –Multiple instances in the document

Amend to ECDIS

Decision: The proposed amendments accepted as a new clarification for inclusion in Edition 4.0(.3)

**See actions.**

#### 5.20 Encoding of active Submarine Volcanos in ENCs [Sanchez]

AS reported that following a paper to ENCWG3 on undersea volcanos, Australia was tasked to present amendments to the UOC in order to improve the way ECDIS safety route checking functions interact with this type of feature.

The proposal was supported by Carnival.

MH stated that point and area should be applied as appropriate.

Decision; It was agreement that there should be additional guidance in the UOC. There was no consensus on when to change between a point or area symbol.

**See actions.**

#### 5.21 Portrayal of Dredged Area depths in ECDIS\_FINAL [Sanchez]

AS proposed that ECDIS should provide mariners with the information in the most straightforward way. In this case by automatically displaying dredged depths instead of having to perform 'pick-report' on the DRGARE.

Proposals:

- amend S-57 Appendix B.1, Annex A (UOC) section 5.5 to promote the encoding of DRVAL1 of the DRGARE as one or more SOUNDG objects.
- update S-52 to require the display of DRGARE depths by ECDIS (same viewing group as soundings).

Decision: Don't to make changes to the lookup table, use a SEARE to provide the necessary 'dredged area' text. Change the UOC to inform that the generated warning be ignored.

**See actions.**

#### 5.22 PYLONS point objects and S-58 [Sanchez]

AS reported that S-58 Error check 1637 was altered between S-58 Ed 5.0.0 and Ed 6.1.0 and proposed that S-58 check 1637 should be amended to to read: 'For each PYLONS feature object of type area where.....'.

Decision: Accepted for inclusion in a subsequent Edition. The wording will need to be refined.

**See actions.**

#### 5.23 Cyber Security Fix [Mellor]

TM reported that following an ENCWG3 paper by HP on cyber security, and study was carried out on how to encrypt / authenticate axillary txt and .tif files. He proposed that In order to preserve the current ENC delivery process in use today, S-63 should be extended to create a new participant in the scheme, a Sub-Data Server.

All Sub-Data Servers appointed by a Data Server must apply to the IHO to be part of the S-63 security scheme.

Comments from JP. How do we stop new DS signing all of the data as well?

HP – if the model is to be adopted, test datasets need to be created for implemented to test and evaluate the impact.

Decision: The meeting agreed in general, but noted that testing and an impact assessment would have to be carried out to establish whether the impact of implementing the proposal outweighs the possible benefits.

Proposal: Consider signing all the files from the data server – need additional information from /CIRM – of what will happen is a full catalogue file but partial dataset.

***See actions.***

5.24 Mismatching Agency Code (AGEN) values in ENC's [Sanchez]

AS reported that ENC validation checks reporting 'Critical errors' when FOID AGEN and DSID AGEN do not match or are incorrect. He proposed that a new S-58 test is required to prevent the report of 'Critical errors' when FOID AGEN and DSID AGEN do not match.

Decision: The meeting agreed that more testing required.

5.25 Omnidirectional lights with a nominal range  $\geq 10\text{NM}$  [Sanchez]

AS proposed that additional guidance needs to be included on the encoding of omnidirectional lights. Recommended that UOC section 12.1.2 guidance to exclude 'aero lights and 'air obstruction lights' should be expanded.

The way of encoding a 'centre point' object for lights on bridges over navigable water without generating confusion for the mariner.

Develop a new S-58 check (Warning) to alert encoders of noncompliance with section 12.1.2 of the UOC.

Decision: The proposal was approved for a subsequent Edition of the standard.

Discuss the possibility of amending S-52 PL CSP LIGHTS06 to include a suitable 'centre point' symbol when displaying omnidirectional lights of nominal range  $\geq 10\text{NM}$  on land that do not share position with a valid aid to navigation structure object of type Point

***See actions.***

5.26 Overscale area pattern performance in ECDIS [Sanchez]

AS reported that existing S-52 guidance regarding the use of the over-scale area pattern is to avoid creating additional clutter in the area where a ship is navigating. If the mariner decides to over zoom, only the-over scale indication should be displayed. He questioned whether the over-scale pattern should be able to be turned off or not. If not, should it be part of the Base display?

Decision: As this would require a new edition, it was decided to implement the proposal. Investigate whether to add an additional test to S-64 to test.

***See actions.***

#### 5.27 NON-HO data boundary in ECDIS [Sanchez]

AS proposed that there is some confusion between terms 'non-HO Information' and 'non-HO data in the S-52 (main document and the PL).

HP S-64 test 3.4 covers this, however there should be some addition text to inform that the non-HO data could be removed.

Decision: It was decided that this was for very small number of use cases and no action required at this stage. Proposed to consider including an additional S-64 test to ensure that the boundary line can't be turned off.

HP noted that the S-62 agency codes also need to be taken into account.

#### 5.28 S-52 Issues with OBSTRN [Mouden]

CM reported that some S-52 rules do not show as isolated danger objects some objects which should be considered as navigationally dangerous.

Decision: Proposed changes to the in look-up tables and conditional symbology procedures were accepted, but would require a major new edition. Noting that there was no S-64 test for

***See actions.***

#### 5.29 S-65 Annex A – HD ENC Guidance [Mellor]

Chair reported that WG was tasked to draft a guidance document on the inclusion of HD bathymetry for inclusion in S-65. Carnival – reported that they are grateful to the AHO for their efforts in their work on including HD bathy in ENC. He noted that this will enable ship operators to navigate more precisely and potentially get vessels into ports which otherwise not have been possible.

ENCWG Chair raised a concern that the document is quite prescriptive for inclusion a high level document such as S-65.

IHO Sec proposed that some of the guidance in the document should be included in S-4.

***See actions.***

#### 5.30 Use of Big Monitors for ECDIS [Peipone]

The Chair reported that he had received a response from CIRM and reported that they reported that they considered that there is no need to make changes to S-64 for large format monitors for current ECDIS. The Chair proposed however, that S-100 ECDIS will certainly include much larger monitors that may include touch screen capabilities. These will certainly have to be part of the type approval regime. The meeting agreed that this should be referred to the S-100 working group for further consideration.

***See actions.***

#### 5.31 Issues identifies for S-52 Pres Lib 4.0.2

1. Issue dealing with the Signal Group has been dealt with – no further action required.
2. List of rules added to the Pres Lib in the Forward to the doc. HP noted that

***See actions.***

## **Presentation from IALA**

Gotrum – ENCWG meetings

Dave Liewald – S-100WG meetings

Remake of al sector lights – colour lights