IHO C&SMWG/12
IHB, MONACO 12-15 SEPTEMBER 2001
MINUTES OF MEETING

Participants:

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Apologies

Apologies were received from Dr Lee Alexander (IEC) and Harmon Colby (NIMA), who were prevented from travelling as a result of recent terrorist action in the USA. Apologies were also received from David D'Aquino (C-Map).

Opening and Welcome

C&S/12/1A rev3
C&S/12/1B
C&S/12/1C
C&S/12/1D

RADM Angrisano and RADM Guy attended the opening of the meeting.

RADM Angrisano expressed sympathy for the USA as a consequence of the terrorist action. He welcomed the attendees and stressed the importance of the WG and its relevance to ensuring that mariners were provided with a clear presentation of hydrographic and related information.

In the absence of the Chairman, Mr Julian Goodyear who is unable to continue participation in the WG because of promotion and re-assignment in Canada, RADM Guy opened the meeting as Acting Chairman at 0900.

2. Election of Chair and Vice-Chair/Secretary

C&S/12/4A - Proposed Secretarial duties
C&S/12/4B - New Terms of Reference (TOR)
C&S/12/4C - Proposed Technical Coordinator's roles
C&S/12/4D – Australian comment
C&S/12/4E – Interim Chairman proposal

The new TOR stipulate that the Chair and Vice-chair serve for a 3 year term. This means that a new election is now due. The current chairman, Julian Goodyear, had indicated that he cannot stand for re-election.

Dr. Matthias Jonas (Germany) was the only candidate and was elected unopposed as Chairman of the C&SMWG.

Dr Jonas assumed the Chair at 0920 and chaired the remainder of the meeting.

Dr Jonas noted that, in the first instance, he will act as interim Chairman until the next WG meeting. Subject to circumstances, he may be available to act as Chairman for a longer period. Mr. Mike Eaton and Mr. Steve Grant will continue as technical coordinators in the interim but replacement personnel are required. This interim arrangement will be influenced by funding availability and by the identification of suitable candidates/volunteers, preferably with regular access to the Chairman.

The new Chairman invited nominations for a vice Chairman and a Technical Coordinator. No nominations were received. The positions therefore remains vacant.

Finance

RADM Guy outlined some financial options to fund the WG; including, seeking funding from the EU or alternatively, seeking bridging finance from volunteering M/S.

As a follow-up to RADM Guy's statement on finance, Australia asked the IHB (Guy) why, if the activities of the WG are so important, is it funded from external funds rather than being funded by the IHO directly. RADM Guy responded that if the meeting wished to raise a proposal for IHO funding it could be considered at CHRIS13 and subsequently considered by the IHO generally.

3. Approval of Agenda

C&S/12/2A rev.5

Item 5.7 was added to the agenda.

4. Approval of the 11th C&SMWG minutes

C&S/12/3A

The minutes of the previous meeting (11) were approved unaltered.

5. Matters arising from various sources: (arranged according to categories)

C&S10,11 – C&SMWG Meeting #10 & #11
CHRIS12 – CHRIS Meeting #12
TSMAD – TSMAD Meetings #6 & #7
IHO/Ind – IHO Industry Workshop June 2001
TC80/WG7 – Minutes of IEC Meeting at IHB, May, 2001

5.1 Administrative Issues:

5.1.1 **Procedural model for maintenance of the Presentation Library**. SevenCs, with Offshore Systems and ASPO Navintra were to develop a model stressing industry involvement, and the testing of new proposals (preferably at sea) before amendments are proposed to the C&SMWG.

Aspo Navintra reported that only a limited amount of discussion had taken place between manufacturers. Navintra outlined the shortcomings of the present arrangements, particularly the fact that implementation priorities should be a starting point and highlighted the impact on manufacturers of incorporating both immediate and deferred amendments.

SevenCs also reported no progress on this matter.

The chairman expressed disappointment that no new proposals were forthcoming. He went on to lead a discussion to try and clarify the current arrangements and to identify suitable options for future activity.

The chairman posed the question whether the meeting wishes to incorporate all extant deferred amendments into S52 e3.3 as a major new edition in the near future or whether the WG wishes to maintain an ever growing list of deferred amendments and only incorporate immediate amendments.

Outcome:

1. *Chairman proposed that the next revision (e3.3) be issued in 2002. e3.3 would bring into effect extant deferred amendments. The Chairman proposed developing a work programme for consideration later in the meeting.*
2. *The meeting supported the concept of circulating draft versions of e3.3 for evaluation prior to formal adoption at a C&SMG.*
3. *The meeting agreed that for consistency of IHO documentation, all documents should in future be issued as new "editions". Any periods of grace, "grandfather" clauses or other special implementation rules shall be included with the edition when it is released. Incremental changes will be indicated 3.3, 3.4, etc. Major revisions will be designated by a sequential prefix – 3.0, 4.0, 5.0, etc.*
4. *It is desirable that edition numbers for S57 and s52 be aligned in the future.*

5.1.2 Financial support of the PL

The IHO budget does not provide funds to support C&SMWG activities. The Presentation Library fund comprising the payments for the digital version of the Pres. Lib. now stands at less than $30k US. Funding options include funding from the E.U.; manufacturers' contributions, sale of the Pres. Lib., individual M/S, and the IHO.

(C&S10,11)
C&S/12/5.1.2A

Canada (Eaton) identified outstanding work that could require about 140K USD to support. An annual maintenance cost of 40-55K USD.

Australia proposed that the IHO should directly fund the activities of C&S, rather than relying on external funding arrangements. There was a place for some external funding, but it should not be the principal source. An urgent funding requirement should be forwarded to CHRIS to ensure that appropriate changes to priorities in the IHO WP are made as soon as possible.

IHB (Tony Pharoah) expressed the view that if the IHO directly funded the support of the PL, then manufacturers "ownership" and therefore participation might diminish.

Navintra proposed that a wider range of industry consultants (including manufacturers) could be used.

IHB (Michel Huet) reminded the meeting that the IHO is seeking a zero growth budget and therefore very strong justification would be required to obtain the necessary funding.

SevenCs noted that as a principle it is undesirable that manufacturers are required to buy a "format". Furthermore, the prices involved with the PL are significantly greater than for other specifications (for example, IEC, etc).

Outcome:

1. *The meeting agreed that realistic sources of funding sources are: IHO, EU and Industry via sales of the P/L.*
2. *Canada (Eaton) will develop an estimate of costs involved in developing e3.3. and for longer term annual costs for further consideration by the meeting. These figures would then be used for submissions to CHRIS and to EU.*

5.1.3 Timing of meetings.

C&S/12/4D - Australian comment

Attending C&SMWG meetings is expensive, sometimes prohibitively, both in time and money, particularly when an inter-continental flight is involved. The problem grows as the number of WGs increases. One way to economise could be by arranging to have two or more related WGs meet back-to-back, e.g. TSMAD then C&SMWG then IEC TC80 WG7. If possible IEC WG meetings should be integrated as well.

Canada (Eaton) proposed that all ECDIS technical meetings should run concurrently or consecutively at the same venue. This would include TSMAD, C&S and IEC.

Australia highlighted the fact that the current arrangements effectively prevent non Euro-Atlantic participants from attending many meetings.

IHB (Tony Pharoah) noted that back to back meetings can be counter-productive because of the intensity of each meeting. He proposed that greater use of the internet could overcome some of the problems. This view was supported by Navintra.

SevenCs preferred C&S meetings and IEC meetings be grouped, rather than C&S and TSMAD. Canada (Eaton) agreed with this. Navintra took a contrary view, citing the fact that back to back meetings might lead to a one year delay if there was any follow-up C&S work.

Outcome:

1. *The meeting agreed that CHRIS should encourage back-to-back ECDIS technical meetings wherever possible. The meetings should normally be limited to two, and should be rotated through geographic regions. The preference is to co-locate IEC WG13 and C&S,as a top priority, followed by C&S and TSMAD.*

5.1.4 How can the C&SMWG make better use of the OEF?

C&S/12/4D - Australian comment

Steve Grant outlined the methodology of a discussion group and list server technology.

Australia outlined the paper proposing greater use of the internet to be presented at CHRIS13 (CHRIS 13/12.B).

Outcome:

1. *Steve Grant will draw up a list of practical guidelines (FAQ) on how discussion groups might be operated.*
2. *The meeting supported the increased use of the internet to progress C&S issues with a wider participation and in advance of formal meetings.*
3. *The meeting wishes to see the OEF become more user-friendly and dynamic in its operation.*

5.2 General Technical Issues:

5.2.1 (C&S10,11) Strategy to reduce and simplify IHO C&S Specs

C&S/12/5.2.1A
C&S/12/5.2.1B
C&S/12/5.2.1C

Canada (Eaton) introduced the topic. With the increase in the number of proposed non-chart related objects such as AIS, VTS, ARPA, MIOs, Mariners' Navigational Objects, etc. in ECDIS, is it appropriate/desirable to continue to have the Mariners' Navigational Objects documented within the Presentation Library? How much effort will be involved in extracting these objects from the PL and creating a separate document. Who will do the work/pay? Do manufacturers want to have to deal with two or more Presentation Libraries? How will co-ordination between two documents be handled and how will conflicts be resolved?

A discussion identified areas that could be addressed under a "reduce and simplify" programme.

Outcome:

1. *The meeting agreed that "reduce and simplify" could include:*

- *transfer navigational objects to IEC documentation*
- *revise viewing groups*
- *reduce conditional symbology by use of direct software*
- *abandon simplified symbology, use only traditional symbology*
- *abandon machine readable symbols, line styles, etc*
- *revision of complex line styles*
- *include manual updates*
- *reduced colour palettes for flat panel displays*
- *functional (generic) rather than technical (specific) specifications*

But:

- *any reduction/simplification must be in harmony with the S57 enc product spec and the IMO ECDIS PS, and*
- *should provide a benefit to HO's or Industry in terms of cost or resources.*

2. *Potential areas for simplification in S-52 e4.0 (at least including those topics listed above) to be discussed via the OEF to allow priorities and a work programme to be proposed and adopted at the next C&S meeting. Some topics may also be used as projects for EU funding.*

3. *It was agreed that this revision would also address agenda item 5.2.7.*

5.2.2 Discrepancies between IMO PS / IEC 61174 and S52 App.2

C&S/12/5.2.2A
C&S/12/5.2.1C
C&S/12/4D - Australian comment
C&S/12/12 - Background info

The inconsistencies quoted are:

- putting all buoys and beacons in Display Base, and
- putting FERYRT in Standard Display.

However, the IHO cannot change S-52 to be inconsistent with the IMO PS.

Outcome:

1. *The meeting re-affirmed its C&S recommendations on ferry route (FERYRT) and buoys and beacons because they are in the best interests of safety.*

2. *As the treatment of FERYRT is in conflict with the IMO PS the Chairman will draft a letter for IHB countersignature, informing the*

Chairman of MSC of the situation and seeking advice on what further action the IHO or IMO should take.

5.2.3 Display priorities of dual-fuelled ECDIS

C&S10/18.5
C&S/12/4D - Australian comment
CHRIS/12 advised that the S-52 WG may be reconvened to address this issue.

Australia introduced this topic, pointing out that there is no guidance in S-52 to advise the mariner of the availability and optimal coverage of RNC and ENC. Australia provided the following functional requirement as a starting point for discussion:

In conjunction with the "over scale" indication (see ECDIS PS 5.1 and 5.2 and Appendices 5 and 7), for any area in which both ENC and RNC are available, an ECDIS shall indicate and provide options for the user to select the most appropriate navigation purpose ENC or suitably scaled RNC from those available. The ECDIS shall display both the navigation purpose code/compilation scale of the highest navigation purpose code/largest compilation scale ENC available and the scale of the largest scale RNC available. The user shall thereby be able to determine and select the most appropriate chart to use through a comparison between the navigation purpose/compilation scale of the ENC available for an area and the largest scale RNC available for the same area.

Navintra noted that IEC 61174 e2 requires that ENC coverage is identified when operating in RNC mode, but not the other way around. Also there is a requirement for a graphical index for ENC; but not RNC.

Outcome:

1. *The meeting considered that this issue should first be considered as an operational issue by CHRIS who should then direct appropriate action. This could be either to invite C&S to draft suitable amendments to S-52, invite consideration by IEC TC80 WG7, or to inform the Chairman of MSC of the potential conflicts and inconsistencies with the IMO PS and seek advice.*

5.2.4 Should the IHO Standards, particularly S-52 App. 2 and the Pres. Lib., be brought into alignment with the ISO and other world Standards?

C&S/12/4D - Australian comment

IHB (Pharoah) introduced this item. He noted that at the time S57 and S52 were drawn up, there were no other complementary standards against which to model IHO documentation. The establishment of ISO TC211 and its work on geo-spatial data standards means that it is now appropriate that the ENC Product Spec be re-defined to conform with ISO formats and this work has commenced. This may have impacts on S-52.

Outcome:

1. *The meeting agreed that C&SMWG should monitor the work of TC211 and the re-alignment of the ENC Prod Spec because there may be some impact on the Pres. Lib. and S-52.*

5.2.5 Contact industry to try and obtain reaction to the PL

CHRIS12/13.2B
C&S/12/5.2.5A

IHB (Huet) introduced this item. A questionnaire was circulated to all purchasers of the digital Pres. Lib. by the IHB late in 1999. There was no response. CHRIS/12 directed that the C&SMWG and IHB should try again. How can this be done to ensure that there is a meaningful response?

Outcome:

1. *The Chairman will inform manufacturers by letter of the C&S proposed work programme, its aims and the anticipated greater use of the OEF. He will invite comments, proposals, participation and contributions from all interested parties.*

5.2.6 Go through all amendments to the UOC after the first edition and make any necessary changes to S52 App.2 and Pres. Lib. that have not already been made. A new ED. 2.1 of the UOC will be published before the IHC in April 2002.

C&S/12/4D - Australian comment

Canada (Eaton) introduced this item. He noted that a review had yet to be made, but it was an important activity. However, it would need funding in order to proceed. It was noted that changes to the UOC often have flow-on effects to the Pres. Lib. and TSMAD must be made aware of this.

Outcome:

1. *The meeting agreed that TSMAD should be made aware that coding changes and flexibility being made in the UOC can have an adverse impact on presentation issues. Canada (Eaton) will draft an information letter to TSMAD highlighting this.*
2. *The meeting agreed that a review of the impact of the changes to the UOC was an important pre-cursor to releasing S-52 e3.3 and must be incorporated in the C&S work program and funded appropriately.*

5.2.7 Preliminary study of Pres. Lib. for 'mid-life refit'

C&S/12/4D - Australian and Eaton's comments

Canada (Eaton) introduced this item. A significant revision of S-52 should consider possibilities such as a more up-to-date vector symbol descriptions; replacing at least some conditional symbology procedures by faster methods (e.g. .dll file) that can be updated more easily; etc. This will require significant work and the use of knowledgeable contractors working in consultation with WG members and HO's.

Outcome:

1. *The meeting agreed that a "mid-life refit" is in effect the development of e4.0 and that a preliminary study was effectively part of the consideration already discussed under 5.2.1.*

5.3 Amendments to Presentation Library

5.3.1 Publication of Annex D to S-52 App 2 (slight deviations)

(C&S10,11)

Canada (Eaton) introduced this item. The original version of 'Slight Deviations' from the 1998 meeting was issued in amendment 05, item CS04.1.d05.cl.004 which put it in C&S section 1. This should be amended to the wording agreed at C&S 10 in Sept '00. Canada (Eaton) recommended that it be included in section 1 of S-52

Outcome:

1. *The meeting agreed that the list of "slight deviations" as agreed at C&S9 revised at C&S11 be included in Section 1 of S-52 Appendix 2. This arrangement will be treated as a deferred amendment, that supersedes deferred amendment CS04.1.d05.cl.004.*

5.3.2 New edition of M-4, due out by April 2002, could include new paper chart symbols. If so, these should be reviewed for any impact on the S52 App.2 symbology.

(C&S10/12.7)

IHB (Huet) informed the meeting that a new version of M4 may be released in 2002. The IHB is unaware of any significant additions or changes to symbology.

Outcome:

1. *The meeting agreed that the Chart Standardization Committee (CSC) should be approached to provide a list of revised or new symbols envisaged in M4. The Chairman will draft a letter for IHB requesting the information from the CSC.*

5.3.3 Immediate amendment 04, and Deferred amendment 05 relating to S-57 Edition 3.1 – release

(C&S10/12.8)

IHB (Huet) informed the meeting that these amendments were issued in MD 03 – March 2000. Temporary .DAI file PSTY03_2b will be available to PL subscribers in the near future.

Outcome:

1. *The meeting agreed that the .DAI file should be released officially by the IHB, but only after it has been checked and confirmed as valid by interested subscribers. The target date for this is the end of 2001.*
2. *The Chairman will inform the IHB when the information can be released.*

5.3.4 **Next edition of S-52 App 2 to bring the deferred amendments into effect and align edition number with S-57.**

(C&S10/12.13 & 13.2)
C&S/12/4D - Australian comment

Canada (Eaton) introduced this topic. Because the C&S Specs. were issued before the Pres. Lib. and amended earlier, the current edition number of the C&S Specs is ed.4, whereas the current edition numbers of the Pres. Lib. and of S57 is ed.3. When the new edition is issued the C&S Specs would normally become ed.5, which would be out of line with the Pres. Lib. and with S57. Should we keep the numbering of the C&S Specifications as ed.4 with the new edition, distinguished the new edition by some work-around such as 'ed.4 bis.' (or 'ed. 4*', or 'ed.4 rev.' ?) to bring them into line with edition 4 of the Pres. Lib. and edition 4 of S57?

IHB (Huet) explained that S52 contains a number of supplementary documents. Each document is produced independently by a number of WG's. As such, each document is revised independently and edition numbering is therefore not aligned.

Outcome:

1. *The meeting agreed that alignment of edition numbering is desirable but difficult to achieve in the circumstances. Accordingly, independent and incremental edition numbering will continue.*
2. *The meeting agreed that better promulgation of the current edition numbers is required. All documents should provide a reference to the IHO website where a list of current editions is already maintained.*
3. *The meeting recommended that a change control history should be included in each document as they are revised.*

5.3.5 Removal of the requirement in C&S Specs. section 1.2.3 para. 2 for the ECDIS onboard to accept amendments to minor details directly from the updating authority

C&S/12/4D - Australian comment

Canada (Eaton) introduced this item. Transas Marine has previously suggested the removal of the requirement in C&S Specs. section 1.2.3 para. 2 for the ECDIS onboard to accept amendments to minor details directly from the updating authority. Canada (Eaton) noted that this method has not been used in the past and considered that it was undesirable to implement it, notwithstanding its inclusion as an option in S-52. This view was supported by Navintra. Australia's contrary view was not supported.

Outcome:

1. *The meeting agreed that such an option should be withdrawn. Accordingly appropriate action should be promulgated as a deferred amendment.*

5.4 Specific Technical Issues:

5.4.1 Symbolization of unsurveyed/no data, dredged areas, over-scale areas: - current status?

(C&S10,11)
C&S/12/5.4.1A

Canada (Beale) introduced this item. He described the work done under contract to test and develop methods to highlight and improve the visual presentation of the areas under discussion. Work appears to be successful, but no illustrations were available at the time of the meeting. They are not safety related issues and would therefore be introduced as a deferred amendment.

Navintra noted that until illustrations were available it is difficult to pass comment for unsurveyed/no data and dredged areas. He continued that mariners should be allowed to select whether the current over-scale area symbology is shown or not, since the PresLib defines this pattern as "standard display" and assigns it to a separate viewing group.

Outcome:

1. The meeting agreed that no further action could be taken until illustrations were made available. These could be circulated via internet for comment, resolution and agreement prior to the next meeting. If accepted, the amended symbology would be introduced as a deferred amendment.

5.4.2 Labelling Safety Contour- status report?

(C&S10,11)
C&S12/5.4.1A
C&S12/5/4/2A
C&S12/5/4/2B
C&S/12/4D - Australian comment

Australia introduced this item by describing the benefits of providing contour labels. Canada (Eaton) described the development work undertaken and the potential options. These are illustrated in paper 5/5/2A. There are two proposed options; a label against a rectangular background, and a label against a shaped background.

During discussion, the following presentation points were raised:

- should a SCAMIN be applied to the labelling?
- is the labelling interval fixed?
- should labelling apply to all contours?
- is sea testing required?

Outcome:

1. *The meeting agreed that sea and shore based evaluation is required before C&SMWG can endorse the proposal. Evaluation should include:*

daytime and night time viewing

application to different data and different locations

the impact of scale

the density and positioning of labels

the treatment of "cliff" contours (linear depth areas)

2. *SevenCs may be able to provide test-bed ECS software for evaluation at ISSUS or other nautical training institutes. SevenCs may also be able to provide a contour labelling function in "SeeMyENC" freeware. Navintra may be able to provide test-bed software for evaluation by BSH in MV "Gauss". If these software become available, WG members are encouraged to obtain mariner feedback and forward results to the Chairman for collation and consideration at a subsequent C&S meeting.*

3. *The meeting considered that the following should be evaluated:*

contour labels shown against a shaped rather than a rectangular background.

a minimum requirement of user-selectable labelling of the safety contour (labels on / labels off function). Manufacturers may, in addition, provide an option to label a selection of contours including the safety contour.

a contour label showing at least once for each visible segment of a contour shown within the display window.

a mechanism that prevents overwriting and minimises clutter caused by the density of contour labelling.

the safety contour label takes precedence over labels on other contours.

where the safety contour relies within a "cliff" contour (linear depth area), the contour label shall indicate the value of the safety contour.

5.4.3 What is the impact to S-52 if the linear depth areas are dropped from S-57

(C&S10,11)
C&S/12/5.4.3A (section 3)
C&S/12/5.4.3B
C&S12/5.2.1C
C&S/12/4D - Australian and Eaton's comments

Navintra noted that although the proposal will make ENC production easier (no requirement to generate linear depth areas), it will place an increased burden on manufacturers.

IHB (Pharoah) outlined the history of this matter and previous consideration of linear depth areas. It was pointed out that TSMAD is seeking an opinion on this initiative, particularly in respect of any impacts on S-52 or any other presentation issues.

Australia clarified that although TSMAD has considered this matter and signalled its support, it will not become effective until Edition 4.0 of S-57 is introduced. S-57 e4 is some way off.

Australia pointed out that as a principle it was not correct to condone the creation of linear depth areas in ECDIS as a means of "filling in the gaps" in the ENC data. This is a

particular concern because those areas that are described by linear depth areas are those areas for which there is limited data available. This view was supported by UK.

France asked for clarification regarding the safety contour and how a number of linear objects - COALNE, DAMCON, GATCON, LNDARE, SLCONS, FLODOC or PONTON that currently do not raise alarms might be highlighted or recognised.

Canada (Eaton) confirmed that the objects identified by France are not alarmed (IMO Performance Standard 10.5 refers)and are not subject to the safety contour (they share the same coloured line..

A number of participants expressed concern that the inclusion of the nominated linear objects would cause excessive alarms and in any case, their nature did not warrant inclusion in the safety contour function.

Outcome:

1. *The meeting agreed that TSMAD be informed that:*

provided ECDIS software can satisfactorily substitute the requirement for linear depth areas in an ENC, there appears to be no particular impacts on S-52 or presentation issues in general.

however, reaction by ECDIS manufacturers to this initiative is mixed because of the increased requirements for processing power and software overheads.

there may be some concern over data liability issues, but this is a matter for CHRIS or TSMAD consideration rather than C&SMWG.

2. *The meeting did not consider COALNE, DAMCON, GATCON, LNDARE, SLCONS, FLODOC or PONTON should be subject to alarms or be included in the safety contour.*

3. *In view of the fact that certain features may not raise alarms, the Chairman will review the IMO model course on ECDIS and identify potential amendments to IMO to ensure mariners are made aware of these limitations.*

5.4.4 Display of S-57 attributes INFORM and TXTDSC information on collection objects.

(C&S10,11)
C&S/12/5.4.3A (section 4)
C&S/12/4D - Australian and Eaton's comments

France introduced this item.

Navintra proposed that TSMAD be informed that inclusion of information on collection objects leads to complications in presentation and in particular it leads to excessive clutter. Instead, HO's should include such information on real objects rather than on collection objects.

Canada (Eaton) remained concerned that certain collection objects were the only logical place to place such information – for example, information about TSS.

Outcome:

1. *TSMAD should be informed that data producers need to be aware that applying INFORM and TXTDSC information to collection objects is likely to create excessive clutter. Accordingly, they should be asked to consider methods that associate such information with a minimum number of relevant real world objects instead.*
2. *The meeting also agreed that manufacturers should be left to develop appropriate solutions for displaying information associated with collection objects that minimises clutter.*
3. *A deferred amendment will be issued to amend Presentation Library 8.6.2 accordingly.*

5.4.5 Assigning scale ranges by manufacturers to navigational purposes has display implications

(C&S10/11.5)
C&S/12/4D - Australian and Eaton's comments

5.4.15 Issues with SCAMIN and ECDIS displays using stepped display scales

C&S/12/5.4.15A
C&S/12/5.4.15B

5.4.5 and 5.4.15 were discussed together.

Australia introduced 5.4.5 by proposing that an explicit statement be included in S-52 that scale ranges should NOT be tied to navigational purpose codes and that a suitable test should be included in IEC 61174 to check this.

UK introduced 5.4.15.

SevenCs noted that a SCAMIN workshop had been held and one outcome was to conclude that there is no easy solution and it depended upon the application and the approach used.

Navintra agreed that it is a difficult problem exacerbated by the fact that adjacent countries sometimes employ a usage codes in different ways.

Canada (Eaton) confirmed that S-52 does not provide any guidance on this matter.

Navintra proposed that TSMAD be requested to advise HO's to set SCAMIN value at least twice the compilation scale.

Outcome:

1. *The meeting agreed that the relationship between usage codes, compilation scale and SCAMIN factor requires further discussion. Australia (Chris Roberts) will lead a C&S OEF discussion group to develop proposals for subsequent C&S or TSMAD meetings as appropriate.*
2. *The meeting agreed that the use of stepped display scales could be addressed by TSMAD establishing a minimum tolerance relationship*

between SCAMIN value and compilation scale, for example a ratio of 2:1.

5.4.6 Use of SCAMIN on display base features

(C&S10/12.10)
C&S/12/4D - Australian comment

It has been proposed previously that validation checks might be extended to check that SCAMIN has not been added to display base features. In some cases the Pres. Lib. remedies this, for example. when a contour becomes the safety contour the conditional procedure re-sets SCAMIN to infinity. Have there been any reported problems with this?

No reports have been received.

Outcome:

1. *No further action.*

5.4.7 Consider recommendations from IHO Tidal Committee

(CHRIS12)
C&S/12/5.4.7A
C&S/12/5.4.7B
C&S /12/5.2.1C

Australia introduced this item, outlining the recommendations of the Tidal Committee (TC). It was noted that the recommendations of the TC are not supported by any proposals on how their recommendations might be implemented practically. It was noted that the presentation of chart information is an overwhelming priority of both C&S and TSMAD and capacity to address additional ECDIS capabilities is very limited. Accordingly, the tidal working group will at least need to conduct some preliminary work and develop more specific proposals for consideration. This will obviously require closer liaison with C&S and TSMAD than hitherto.

It is understood that TSMAD will be providing a response to the TC advising them of the general situation regarding ECDIS specifications development.

It may be useful for the TC to study examples of the use of tidal information in existing ECS and in those ECDIS systems that offer tidal tools and features beyond the requirements of the ECDIS PS.

Outcome:

1. *The meeting considered that it is more appropriate for TSMAD to respond to the TC in the first instance. C&SMWG will become more involved once the data model has been defined and developed by TSMAD.*
2. *Individual members of the C&S WG agreed to contact members of the TC to brief them more fully and establish lines of communication.*

5.4.8 Symbolisation of Tunny Net in Display Base as raised by Spain at TSMAD/7

C&S/12/5.4.8A
C&S/12/5.2.1C
C&S/12/4D - Australian and Eaton's comments

This is a proposal from Spain. Tunny nets are heavy, offshore objects that are an obvious danger to shipping. Object class FSHFAC and attribute CATFIF stresses shallow water and as such does not ensure display in the standard display. Currently the only way to overcome this is to double encode the feature as an obstruction in order to raise appropriate alarms. This creates clutter since it requires the creation of two objects for the same feature.

It was suggested that the use of an association object may also be a useful mechanism to address this situation.

It was noted that to include Tunny nets in the base display, as proposed would entail considerable amendments, including; changes to the IMO PS, conditional symbology procedures, look-up tables, software updates to existing machines. It would also create a precedent and invite further requests for similar offshore objects.

It was agreed that the Spanish solution was a pragmatic solution to overcome the situation. It was also noted that the UK has adopted a similarly innovative approach to the treatment of certain offshore features otherwise not covered by appropriate alarm and display mechanisms.

Outcome:

1. *The meeting agreed that no action was required. The current encoding solution being used by Spain is an appropriate way of overcoming the situation.*

5.4.9 New IHO Test Data Set (TDS) plots needed that conform to S-57 E3.1

This item was introduced by Canada (Eaton). When will new plots ('graphical representations' in IEC 61174) for the new TDS be prepared? Will a digital version be adequate or are hard-copy versions also required? This will also take care of changes in C&S symbology, but there may be a need for two versions:

1. changes for immediate amendments only, if the TDS plots are issued before Pres. Lib. ed 4, and
2. a further version incorporating all changes for all amendments, including deferred amendments, if it is produced after Pres. Lib. ed. 4 is issued.

IHB (Huet) informed the meeting that a new test data set has been received and will be posted on the IHO website shortly. This dataset incorporates S57 e3.0 and S-57 e3.1.

The meeting was informed that funding was not available to create the plots.

Navintra suggested that a cost-saving could be made by limiting the plots to a collection of screen samples from one or more type -approved ECDIS' rather than large format paper plots of the test data set.

Outcome:

1. *The meeting:*

a. *confirmed the requirement for two versions of the plots:*

(1) *a version incorporating PresLib 3.2 + all immediate amendments, and*

(2) *a version incorporating PresLib 3.2 + all immediate and extant deferred amendments*

b. *agreed that digital versions only were required.*

2. *Navintra agreed to provide a series of screen dump plots that will satisfy the requirements of 1.a(1) and 1.a(2).*

3. *C&SMWG will review and validate the Navintra screen dump plots.*

4. *On completion of successful validation, the screen dump plots will be published and regarded as the IHO endorsed standard representation. As is the case with the current plots, the new IHO endorsed standard representations will not affect the option to enable "slight deviations". The screen dump plots should be noted accordingly.*

5.4.10a Displaying PICREP.TIFF

C&S/12/5.4.10A - UKHO proposal to TSMAD/7
C&S/12/5.4.10B
C&S/12/4D - Australian and Eaton's comments

Germany introduced this item. There are questions about colours for TIFF files on the day displays and on whether TIFF files can be shown at night without compromising night vision. Also, there is no convention or guidance for updating such files.

Navintra explained that the date and time stamp associated with the TIFF file has already been demonstrated as a basis to track the version control and updating of the files. However, it has yet to be endorsed by TSMAD.

IEC specifications leave manufacturers to provide appropriate solutions that enable such files to be displayed without affecting night vision.

Discussion centred on whether the WG should set standards and conditions or merely provide some guiding principles.

Outcome:

1. *The meeting invited TSMAD to consider further the matter of updating for PICREP and TXTDSC files.*

2. *The meeting agreed that manufacturers should provide appropriate solutions that enable PICREP files to be displayed without affecting night vision. This will be incorporated as a deferred amendment in Appendix 2 to S-52.*

3. *The meeting agreed to monitor the solutions that are being developed by manufacturers, but not to impose particular technical standards at this stage.*

4. *Navintra will raise a proposal on updating PICREP and TXTDSC files for subsequent submission by the WG to TSMAD.*

5.4.10b Displaying TXTDSC

C&S/12/4D - Australian and Eaton's comments

Should there be separate symbols for TXTDSC (file of text extracted from a nautical publication) and INFORM (textual information about an object).

Canada (Eaton) informed the meeting that studies had shown that the introduction of new symbols should be avoided since the mariner already has difficulty in appreciating the large number of symbols that are already in use.

Outcome:

1. *The meeting agreed that the introduction of additional symbology would not be beneficial and the current "i" symbol was well known as representing "information" in general.*

2. *This topic may be discussed further as part of the "reduce and simplify" activities already covered under agenda item 5.2.1.*

5.4.11 Displaying data dependent objects (DATEND, DATSTA, PEREND, PERSTA) such as temporary and provisional NtoMs

(TC80/WG7)
CS/12/5.4.10B
C&S/12/4D - Australian comment

Germany introduced this item. Pres. Lib. 8.4 identifies 'Date-dependent Objects', and points out that PresLib e.4 may need to describe their display. At present the Pres. Lib. fig 1 has a filter which prevents any object being shown outside its implementation dates. Therefore there may be a need for a symbol to identify these date-dependent objects when displayed outside their implementation dates for route planning purposes.

Navintra explained that date dependent attributes are not catered for in all ECDIS drawing engines. Navintra is an example of a drawing engine that does cater for date dependent attributes.

Navintra proposed that arrangements should be made that allow the mariner to nominate the effective dates for which the ECDIS should "draw" the picture. In the interests of standardisation, this will require some basic guidance for manufacturers. Australia informed the meeting that the Australian Navy is asking for this feature specifically in its tender documentation due out in October/November 2001.

It was agreed that it was inappropriate to use INFORM as a means of alerting mariners, because this would result in excessive clutter. UK pointed out that in certain cases the UKHO creates a cautionary area with a "P Notice" attributed to it. This is used as a means

of ensuring that the mariner is informed of changes that have taken affect or are due to take effect in the area being navigated.

DNV pointed out that there is established "trial manoeuvre" symbology that might be a basis for the "time look ahead" facility required to display DATEND, DATSTA, PEREND, PERSTA.

Australia pointed out that there is a requirement to state the function requirement for a "time look-ahead " function and a consequent requirement for appropriate symbology. The following statements might form the basis of such a functional requirement:

> *ECDIS shall enable a route plan to be checked based on a user-selected "time window" in order to account for all the applicable chart updates that will affect a route plan at a future date within that "time window".*
>
> *ECDIS shall enable the user to easily identify future additions or deletions to ENC's and RNC's together with the time that these changes take effect. This capability shall be available in both route planning and route monitoring modes.*

IHB (Huet) informed the meeting that it might be appropriate to indicate the requirement to support time/date dependent objects in S-52. In the absence of an active S-52 Updating WG, this would require a submission to be made to CHRIS.

Outcome:

1. *The meeting considered that there was no obvious requirement for the WG to specify additional symbology at this stage.*
2. *The meeting agreed that there were two options to achieve the requirement to support time/date dependent objects in ECDIS, either:*

a. *the ECDIS could allow the user to show time/date dependent objects active at a future "time/date window", or*

b. *the ECDIS could show all objects in the database, including all time/date dependent objects, irrespective of the current time/date. Information on time/date restrictions would be available via "pick report".*

In either case, the user must be made aware, through a continuous indication, that objects in the display may not be valid at the current time/date.

5.4.12 Lower CATZOC values, apply grey circle to soundings effected

C&S/12/5.2.1C
C&S/12/4D - Australian and Eaton's comments

Relationship with **M_QUAL** attribute CATZOC to soundings **SOUNDG** may have to be formed using a collection object so that conditional procedures can work on such soundings. This will require another new CSP, probably an extensive one.

Outcome:

1. *In the interests of time Australia withdrew this item and proposed that Australia (Roberts) may pursue the matter further by via OEF discussion.*

5.4.13 Scaled outline of own ship gets lost

C&S /12/5.2.1C
C&S/12/4D - Australian comment

Canada (Eaton) introduced this item. Problem reported by Captain Armstrong of the "Canadian Progress" in Oct. '99 that the scaled outline of own ship gets lost amongst parallel depth contours and shoreline of a narrow channel. A number of presentation options are under investigation, but have yet to be technically and ergonomically evaluated.

Outcome:

1. *The meeting considered that this was a matter of high priority and should therefore be reflected accordingly in the WG Work Programme. This work must be coordinated with IEC TC80 and communicated to WG's 7 and 13 as required.*
2. *The WG Technical Coordinator (Grant) will communicate with TC80.*

5.4.14 Issues with masked geometry of type line and truncated and masked edges

C&S/12/5.4.3A (sections 1 and 2)

France introduced this item. Although S-52 allows "mask" for areas, it does not always work for linear objects. An example where "mask" might apply to line geometry is when a linear depth area is involved.

France proposes to add a new sentence to S-52 which requires that an edge encoded with [USAG] = {3} must be masked.

Navintra noted that if S-52 was amended to accommodate this feature, it would have the same impact as discussed in 5.4.8 (Tunny Nets).

Outcome:

1. *The meeting agreed that it was inappropriate to amend the Pres. Lib at this stage, but that the proposal should be considered as part of the major revision (PresLib e4.0).*

   Canada (Eaton) later pointed out that PresLib section 7.4.5.2 does not mask an areas boundary with the USAG field = 3 (area truncated by a cell boundary) and so a minor amendment to add this is required as pointed out by France.

5.4.16 Proposed revision to S-52 and IEC 61174 – Displaying "Unknown Objects"

C&S/12/5.4.16A
C&S/12/5.4.16B

This item was forwarded by C-Map (D'Aquino) and seeks to remove the requirement to display a symbol for object classes that cannot be symbolised because they are not recognised by the PresLib. This may be because the PresLib is out of date or because there is an error in the ENC.

Canada (Eaton) explained that a warning was required to be shown on the basis that the mariner must know that there is a possibility of a danger in that location. A side issue there is a typo error in IEC 61174 6.5.1 which specifies "object" instead of "object class". This is a cause for confusion.

Outcome:

1. *The meeting did not agree to the proposal by C-Map, but did accept the proposal by Canada (Eaton) for a minor clarification to the Pres Lib section 8.3.3.3.*

5.5 ENC Updating and Mariner's Notes:

5.5.1 Mariners should be able to add any chart symbol

C&S/12/5.2.1C
C&S/12/5.5.1A
C&S/12/4D - Australian comment

Germany introduced this item. Adding any chart symbol is required by C&S Specs 2.3.1b.3 so that the mariner can add manual chart corrections and own notes. However there appears to be inconsistencies over the colours to be used for mariners information and manual updates. In addition, there is a requirement to be able to include all the chart symbols in the PresLib. It was pointed out by Navintra and others that this imposes a burden on the software and it is inappropriate that mariners can in effect draw their own charts. Anecdotal evidence indicates that this function is not being used by mariners.

Further comment from Canada (Eaton) pointed out that mariner drawn objects do not activate ECDIS alarms and indications.

There is also a distinction between mariners information and manual chart corrections – yet they are both "unofficial" chart information and should therefore enjoy a similar display status.

Canada (Eaton) explained that the intention was that the mariner should be able to add his own observations of hazards, new buoys, landmarks, as he does on a paper chart. Using orange would mimic the traditional method of hand drawn corrections on paper charts which are normally entered in magenta. He also pointed out that when ECDIS was being defined, it was not the intention that ECDIS would have a capability to allow the mariner in effect to construct his own ENC.

Outcome:

1. *After considerable discussion, no outcome was reached. Accordingly, Germany proposed that the discussion might continue on the OEF and be raised again at the next meeting.*

5.5.2 Implement C&SMWG 10 ('99) suggestion for standardised display of automatic chart corrections on mariner's demand

Navintra introduced this item. He noted that this item had been considered previously when Transas (Vorobiev) suggested that better arrangements were required to identify automatic chart updates. In particular to use similar symbology as that used to highlight manual updates ("pogo stick", "slash", et cetera) but to use wider line widths. Once acknowledged, the symbols would be inhibited unless demanded by the user for review purposes.

SevenCs demonstrated their approach to illustrating automatic updates.

Canada (Eaton) confirmed that S-52 does not specify a standard solution.

As there are now a number of solutions that have been developed is there a requirement to impose a standardised solutions? The general view was that this function need not be standardised.

Outcome:

1. *In view of the lack of support, the proposal was withdrawn by Navintra.*

5.6. Work in Progress - display issues:

5.6.1 Investigate the possibility of reducing from 5 to 3 colour tables

C&S/12/5.6.1A
C&S/12/5.6.1B
C&S/12/4D - Australian and Eaton's comments

Canada (Grant) provided illustrations of work done so far and provided a brief summary of C&S/12/5.6.1A and C&S/12/5.6.1B.

Generally colours are less "washed out" and foreground colours are more prominent, leading to clearer displays.

Navintra queried why it was necessary to have two black background tables showing essentially the same display if the user is permitted to adjust contrast and brilliance. The opinion of Navintra is that two separate black background tables are required only if they have significantly different colour assignments – for example if a "night" display uses less colours than a "daylight/dusk" display.

There was general approval of the new arrangements. Discussion then centred on how the proposals could be trialed and evaluated under operational conditions.

Outcome:

1. *The meeting supported the proposals. Technical details of the 3 table solution will be distributed to interested parties seeking comment for consideration at the next meeting.*
2. *The meeting particularly encouraged evaluation of the 3 table solution in the development of ECDIS flat panel displays.*

3. *Feedback may result in further technical investigations prior to incorporation in PresLib e3.3.*

4. *If and when comments from interested parties are supportive, C&S will issue a deferred amendment allowing the 3 table solution to be offered by manufacturers as an alternative to the current 5 table requirement.*

5.6.2 Investigate the possibility of improving the colour contrast (dE*) and (dC*) of the tables and removing imprecise terms like "close enough" from standards

Navintra provided illustrations to show that tolerances for flat panel displays should be extended to avoid the need to use abstract terms like "close enough". This is because the white point of ECDIS CRT displays is not coincident with the white point of flat panels – it is shifted towards yellow. The proposal suggests concentrating on colour separation rather than colour purity. This proposal moves towards a generic solution rather than a set of specifications biased towards CRT.

Germany, supported by DNV pointed out that large format CRT production is coming to an end. There is enormous pressure to provide specifications that enable flat panels to be used as soon as possible.

Canada (Eaton) acknowledged that the situation needs to be addressed, but cautioned against abandoning the scientific principles that have guided the work done so far.

Outcome:

1. *The meeting agreed that the requirement for displays to meet a dC* value is not required. This will be promulgated as a deferred amendment.*

2. *Navintra will draft appropriate amendments to S-52 App 2 and submit them to the Chairman for review and comment by those attending this meeting, prior to promulgation.*

3. *Work will continue to develop a scientifically based generic expression for colour calibration and testing as a matter of importance.*

5.6.3 Investigate the possibility of improving and simplifying instrumental methods of calibrating monitors for display of colour tables other than Bright Day

(C&S10,11)
C&S/12/5.6.1B

Canada (Grant) provided illustrations that showed that for CRT displays there is a continuing requirement to calibrate monitors individually, particularly to render the black background displays satisfactorily. This view was supported by Navintra.

SevenCs suggested that this finding may not be as critical for flat panel displays.

Outcome:

1. *The meeting confirmed that the current calibration requirements (except for dC* (see item 5.6.2)) for CRT must remain in force.*

2. *The meeting agreed that the revised calibration requirements in IEC 61174 e2.0 must be reflected in S-52 App 2 by deferred amendment. Navintra will prepare a draft and submit to the Chairman for review and comment by those attending this meeting, prior to promulgation.*

3. *Investigations into a scientifically based calibration method for night displays should continue.*

5.6.4 Check out 'out of gamut' problem for deep blue reported by Litton via ASPO

Navintra introduced this topic explaining that Litton (David Blevins) had reported that a designated blue colour token in the dark night table lies outside the capabilities of all existing displays.

Outcome:

1. *Navintra will forward the relevant information to the Chairman who will pass the information to DCIEM for action as appropriate.*

5.6.5 Alternative to night colour table and single colour palette: status report

Canada (Grant) explained the progress that had been made on developing a single "blue background" display, while retaining the overall requirements to display the full range of S-57 features. The resulting solution was demonstrated ashore to mariners, but received no significant level of support. A sea evaluation has been difficult to achieve.

SevenCs reported that they have attempted to demonstrate similar colour tables and have not received any positive reaction.

Canada (Eaton) pointed out that the use of a blue background takes away the one remaining foreground colour available - blue - which is effective on the current IHO tables.

(C&S10/11.6)

Outcome:

1. *The meeting acknowledged that this display has only received a limited evaluation to date. Nevertheless, the lack of any positive reaction and the marginal benefits (if any) that have been demonstrated so far, probably does not warrant further investigation.*

2. *The WG may consider proposals in the future but only if they are supported by compelling, independent analysis and evaluation.*

5.6.6 Flat screen displays

Canada (Eaton) outlined the principal conclusions of the papers, particularly concerning viewing angles, performance in daylight, back lighting and colour tables.

C&S/12/5.4.10B
C&S/12.5.6.6A

Outcome:

1. *The meeting noted the report (C&S/12.5.6.6A) and its conclusions and agreed that progress is being made by manufacturers to address most if not all of the limitations identified in the report.*

5.6.7 Display issues from Australia

1. Due to time constraints in the meeting, Australia withdrew this item from the Agenda.

5.7 Review of Actions and Priorities

In view of length of the meeting and shortage of time, the Chairman proposed that the office holders review the actions and priorities (Item 5.7) on completion of the meeting and draw up a proposed work programme and budget request for submission to CHRIS13. This was agreed by the meeting.

6. Liaison with, and Reports from, other Groups:

6.1 Update on IEC TC80/WG7 (IEC 61174) matters

C&S/12/6.1A

IEC 61174 Edition 2 comes into force shortly. Changes are relatively few – they include changes to colour calibration tables and the inclusion of date dependent objects. Work has commenced on edition 3 through a number of task groups. Anticipated completion date for e3 is 2005-6.

6.2 Liaison with IHO-IEC Harmonisation Group on MIOs (HG MIO)

In the absence of Dr Alexander, no report was tabled.

6.3 Update from the Type Approval Authorities and discussion on any further slight deviations/exceptions

BSH reported that there should be a diminishing requirement to seek further slight deviations. Where a slight deviation is invoked, the test report provides a brief summary of the justification for doing so. A brief outline of mutual recognition was provided. DNV had no further comments to add.

6.4 INT1/S57/S-52 cross reference document Status report?

Canada (Beale) reported that UKHO had produced a cross reference between INT1 and S-57, but work remains outstanding to add S-52 references to the document. Progress on this will depend on finance being available.

6.5 IHO publication to link IEC and TSMAD objects

This matter was dealt with under item 5.2.1.

7. Reports of Tests, Studies, Sea-Trials, etc.:

7.1 Feedback on colours and symbols tests on pilot project with AIS

In the absence of Dr Alexander, no report on progress was available.

7.2 Update on any other Sea Trials/Evaluations

Australia reported that ENC evaluation trials are underway in the Great Barrier Reef and this is providing a number of observations relating to display issues – the labelling of contours, for example.

8. Next meeting (venue, dates)

Outcome:

The next meeting will take place in Hamburg (BSH) in late May 2002.

9. Finance and Support

The Chairman highlighted the parlous state of WG finances and noted that a number of countries had previously provided significant financial support (Canada, Australia, Germany, USA). He observed that Norway (through its shipping interests and DNV) was a significant beneficiary of the activities of the WG and asked the Norwegian representatives to consider supporting the WG directly either through financial support or by filling any of the vacant positions – secretary, vice chairman or technical coordinator.

10. Close of Meeting

The meeting acknowledged the contribution of the IHB and its staff regarding the organisation and support for the meeting. In addition, the meeting wished to acknowledge the preparatory work provided by Chris Roberts (Australia).

The meeting was closed on Saturday 15 Sep at 1218.

LIST OF ACTIONS

Agenda Item	Task	Action
5.1.1	next edition (e3.3) to be issued in 2002. develop work plan for future editions	
5.1.2	request funding via CHRIS13	Secretary / Chairman
5.1.2	request funding from EU	Chairman / IHB
5.1.4	draw up a list of practical guidelines (FAQ) on how discussion groups might be operated	Steve Grant
5.2.1	discuss and propose "reduce and simplify" options for PresLib e4.0, including: - transfer navigational objects to IEC documentation - revise viewing groups - limit conditional symbology - abandon simplified symbology, use only traditional symbology - abandon machine readable symbols, line styles, etc - revision of complex line styles - include manual updates - reduced colour palettes for flat panel displays - functional (generic) rather than technical (specific) specifications	
5.2.2	draft a letter for IHB countersignature, informing the Chairman of MSC of the situation wrt FERYRT and seek advice on what further action the IHO or IMO should take	Chairman / Tech Coordinator
5.2.3	invite CHRIS to consider chart display priorities of dual-fuelled ECDIS	Chairman / Secretary
5.2.4	monitor work of TC211 and realignment of ENC Prod Spec and impact on PresLib and S-52	

5.2.5	inform manufacturers by letter of the C&S proposed work programme, its aims and the anticipated greater use of the OEF. Invite comments, proposals, participation and contributions from all interested parties	Chairman / Tech Coordinator
5.2.6	Advise TSMAD that coding changes and flexibility being made in the UOC can have an adverse impact on presentation issues	Tech Coordinator (Eaton)
5.2.6	Review changes to UOC and impact on PresLib and S-52	Tech Coordinator (Eaton)
5.3.2	Ask CSC to provide a list of new or revised symbols envisaged for new edition of M-4	Chairman / Tech Coordinator (Grant)
5.3.3	.DAI file to be released officially by the IHB, but only after it has been checked and confirmed as valid by interested subscribers. The target date for this is the end of 2001. The Chairman will inform the IHB when the information can be released.	Tech Coordinators / Chairman
5.3.4	change control history should be included in each document as they are revised	
5.3.5	remove the option for the ECDIS onboard to accept amendments to minor details directly from the updating authority	Tech Coordinator (Eaton)
5.4.1	Review and agree on new symbols for unsurveyed/no data, dredged areas, over-scale areas	Meeting members (by internet)
5.4.2	Evaluate options for labelling contours	Navintra, SevenCs, Chairman/BSH
5.4.3	Inform TSMAD of possible impact of safety contour creation by ECDIS software instead of creation from linear depth areas.	Chairman / Tech Coordinator (Grant)
5.4.3	Review IMO model course with regard to alarms	Chairman
5.4.4	Inform TSMAD of impact of INFORM and TXTDSC	Chairman / Tech Coordinator (Grant)
5.4.4	Prepare deferred amendment on INFORM and TXTDSC	Tech Coordinator (Eaton)
5.4.5 5.4.15	Continue discussion on relationship of SCAMIN factor and Compilation Scale via OEF	Australia (Roberts)

5.4.15	and Compilation Scale via OEF	
5.4.5 5.4.15	TSMAD to be asked to consider addressing the use of stepped display scales.	Chairman / Tech Coordinator (Grant)
5.4.7	Request TSMAD to respond to TC inviting them to develop more detailed proposals and to note the impact on both TSMAD and C&S.	Chairman / Tech Coordinator (Grant)
5.4.9	Prepare, review and publish S52 PresLib3.2 Test Data Set plots	Navintra/Chairman/WG members
5.4.10a	Invite TSMAD to consider further updating of PICREP and TXTDSC files	Chairman / Tech Coordinator (Grant)
5.4.10a	Prepare deferred amendment	Tech Coordinator (Eaton)
5.4.12	Continue discussion via OEF on lower CATZOC values and grey circles	Australia (Roberts)
5.4.13	Assist and cooperate with IEC TC80 to improve "own ship" symbology	Chairman / Tech Coordinator (Grant)
5.4.16	Prepare minor clarification	Chairman / Tech Coordinator (Eaton)
5.4.16	Provide feedback to C-Map (D'Aquino)	Tech Coordinator (Eaton)
5.5.1	Continue discussion on mariner input symbology via OEF, including: number and shape of symbols colours attributes to be compiled by the user alarming capabilities	Chairman / Tech Coordinator (Eaton)
5.6.1	Distribute 3-table colour specifications for evaluation by all interested parties	Tech Coordinators (Eaton/Grant) / All interested parties, esp. Manufacturers
5.6.2	Draft, review and publish deferred amendment on removing dC* colour tolerance requirement.	Navintra/Chairman/WG members
5.6.2	Develop generic expression for colour calibration and testing	Ongoing
5.6.3	Prepare and publish deferred amendment to bring S52 App.2 colour calibration into line with IEC 61174	Navintra

5.6.3	Develop scientifically based method for calibration of night displays	Ongoing
5.6.4	Forward details for consideration	Navintra/Chairman/Tech Coordinator (Grant)