

14th CHRIS MEETING
15-17 August 2002, Shanghai, China

MINUTES OF THE 13th CHRIS MEETING
Athens, Greece, 17-19 September 2001

- Notes: 1) *The paragraph numbering is the same as in the agenda (Annex D) unless otherwise specified.*
 2) *A list of acronyms used in these Minutes is provided at Annex A.*

1. OPENING AND ADMINISTRATIVE ARRANGEMENTS

Docs: CHRIS/13/1A rev.10 - List of Documents (also Annex B)
CHRIS/13/1B rev.4 - List of Participants (also Annex C)
CHRIS/13/1C rev.3 - Membership of CHRIS and related Working Groups
CHRIS/13/1D rev.2 - List of CHRIS Members

The Chairman (Rear Admiral Neil GUY, IHB) opened the meeting. Rear Admiral Alexandros MARATOS, Director of the Hellenic Navy Hydrographic Service (HNHS), welcomed the participants and gave an opening address. Practical arrangements for the Meeting were explained by the Greek Member of CHRIS, Alexis HADJANTONIOU. Michel HUET (IHB), Secretary of CHRIS, explained the provision of CHRIS/13 documents. He noted that all CHRIS/13 documents can be downloaded from the IHO website (www.iho.shom.fr/general/ecdis/ecdisnew1.htm). Leon REEDER (South Africa) was appointed as Rapporteur for the Meeting.

2. APPROVAL OF AGENDA

Doc: CHRIS/13/2A rev.7 - Agenda (also Annex D)

The Chairman referred to the Agenda and suggested that agenda items be addressed in the order indicated on the left column, in order to ensure that high priority items be properly considered. This was agreed. No additional items were proposed.

Australia (Robert WARD), also representing the Chairman of C&SMWG, proposed two new documents CHRIS/13/14.2B "Report on C&SMWG/12" and CHRIS/13/14.2C "Financial Arrangements for C&SMWG", for consideration under Agenda Item 14.2. He further asked that this item be addressed on the 2nd day of the Meeting, to allow for attendees to read the above new documents. This was accepted.

3. MATTERS ARISING FROM MINUTES OF 12TH CHRIS MEETING

Docs: CHRIS/13/3A rev.2 – List of Action from CHRIS/12
CHRIS/13/3B - Terms of Reference for CHRIS Committee and Related Working Groups

The Chairman reviewed the status of the action items resulting from the 12th CHRIS Meeting. He noted that most actions had been completed. The following comments were made (Action numbers refer to relevant paragraphs in the Minutes of CHRIS/12):

Action 13.1-2 *(Chairman of IEC TC80/WG7 to investigate the impact on IEC 61174 of S-57 Editions 3.0 and 3.1 being both used for some time.)*

The IHB would query the Chairman, Dan MADES (USA-USCG) on the matter. Australia (RW) noted that there would be a cost impact for ECDIS manufacturers to update their software to S-57 Ed. 3.1.

Action 13.1-3 (*Chairman of TSMAD to advise the IHB about when type-approval authorities must move to new S-57 versions on type-approval*)

Chris DRINKWATER (UK), Chairman of TSMAD, informed that this issue would be re-considered at the December 2001 TSMAD meeting.

Action 13.2 (*To obtain industry reaction to the PL, i.e. which changes are required to enhance it?*)

Australia (RW) said that they were awaiting feedback from Industry

Action 14.1 (*IHB to investigate the possibility of merging CSC with CHRIS*)

The Chairman drew attention to Doc. CHRIS/13/15.1A, containing a proposal by the Chairman of CSC, Peter COX (UK), to make CSC a WG of CHRIS. If supported by CHRIS/13, this proposal would be submitted to the XVIth IHC for endorsement. (See also Item 15.1 below)

Action 14.2-2 (*To set up a discussion topic on Inland ECDIS, on the OEF*)

The IHB would query the new OEF Administrator, Lee Alexander (USA-UNH), on the matter.

Action 14.3 (*To support IHB initiative to organise an IHO Chart & GIS Exhibition at ICC'2001*)

The Chairman noted that the IHO Chart Exhibition at ICC'2001, Beijing, China was a great success and informed that the next ICA Conference would take place in Durban, South Africa, in 2003. The IHB would expect even more support from CHRIS Members in organising again an IHO Chart Exhibition at this occasion.

Action 14.4 (*To extend S-57 scope to "Hydrography", as opposed to "Cartography"*)

UK (CD) informed that this issue would be addressed by the December 2001 TSMAD meeting.

4. REPORT ON THE 6TH WEND COMMITTEE MEETING (CHRIS/13/4A and 4B)

*Docs: CHRIS/13/4A - Report on WEND/6
CHRIS/13/4B - France's proposal for changes to WEND Principles*

The Chairman briefly reported on the 6th WEND Committee Meeting (Norfolk, Va, USA, 18-19 May 2001). There were no comments on Document CHRIS/13/4A.

France (Jean-Louis BOUET-LEBOEUF) presented CHRIS/13/4B, containing proposals for changes to the WEND Principles regarding the production of small scale ENC's. Although this is a WEND issue, he felt that the views of the Meeting on this proposal would be helpful before the matter is referred to WEND.

Australia (RW) expressed support for the paper and welcomed the initiative, recalling that Australia had submitted a similar proposal to the 6th WEND Meeting (Doc. WEND/6/8A), which was not, however,

accepted by that meeting. He also drew attention to the fact that the next WEND Meeting was only planned in two years.

After discussion, the Chairman summarized that all CHRIS/13 participants were invited to consider the French proposal and to send their comments to the IHB by end September 2001. The IHB would then provide France (SHOM) with all comments received, so that they can possibly refine their proposal. When the revised proposal is received from SHOM at the IHB, it would be forwarded to WEND Members for consideration.

Actions:

- ***CHRIS/13 participants*** to send their comments to the IHB by end September 2001.
- ***IHB*** to provide France with all comments received.
- ***France*** to revise their proposal and send it to the IHB.
- ***IHB*** to send the revised French proposal to WEND Members.

5. REPORT ON MSC 73 AND NAV 47

Doc: CHRIS/13/5A - Report on MSC 73 and NAV 47

The Chairman briefly reported on the 73rd Meeting of the IMO Maritime Safety Committee and the 47th MSC Sub-Committee on Navigation. He advised that the IMO was anxious for paper and digital symbology being developed by the IHO for ESSAs (Environmentally Sensitive Sea Areas).

6. ECS DEVELOPMENTS

*Docs: CHRIS/13/6A rev.1 - Draft ECS Data Standard – ISO 19379
CHRIS/13/6B - Draft RTCM Standards for ECS
CHRIS/13/6C - NECSA Letter of 13 September 2001 to RAdm Neil GUY*

The Chairman drew attention to the above documents providing information on the progress made by ISO TC8/SC6/WG7 and RTCM in the preparation of draft ECS Data and Equipment Standards.

Italy (Rosario LA PIRA) informed that they were participating in RTCM/SC109 and ISO TC8/SC6/WG7 meetings, since Italy considers that there is a need for a recognised Electronic Chart System (ECS), other than ECDIS, for small boats not capable of carrying ECDIS equipment. He felt that this development was not of interest to CHRIS.

France (JLBL) and Australia (RW) noted that progress for ECS standards was rapid and will put pressure on IMO Performance Standards for ECDIS.

The Chairman emphasized that HOs can influence Maritime Authorities with respect to national standard, by providing sound advice.

CIRM (Tor SVANES) stated that a lot of consideration is given to standardization but no standard is generated because of the lack of guidelines from IMO, etc. He felt that IHO should not be involved in ECS data standard development.

Germany (Horst HECHT) noted that for ships flying the German flag an ECS, as an auxiliary device, is required to have type-approval even though it does not meet the SOLAS carriage requirement.

Norway (Frode KLEPSVIK) said that he had no concern about ECS standard but he was pleased that there would be such standard. He added that HO should ensure that their ENC data is accepted in ECS databases.

The Chairman summarized that, as the SOLAS Convention covers all shipping, even if the responsibility for certain vessels is delegated to National Maritime Authorities, and in spite of the fact that the IHO has decided that ECS is not an IHO responsibility, the Meeting felt that it was in the interest of all concerned that these developments be monitored, and supported if necessary, by Member States. The IHB would inform MS accordingly.

Action:

- **IHB** to inform by CL Member States on ECS Developments.

7. ENC/SENC DELIVERY

Docs: CHRIS/13/7A - CL15/2001 extract on SENC Delivery
CHRIS/13/7B - Summary of responses received to CL 15/2001
CHRIS/13/7C - The SENC Delivery Option (Radm Neil GUY)

The Chairman introduced this item by recalling that, by IHB CL 15/2001/Rev.1 dated 15 March 2001, IHO Member States were requested to vote on a proposal to amend the wording of IHO Publication S-52, paragraph 3.3, as agreed at CHRIS/12. The deadline had initially been fixed at 1st May 2001. It was subsequently postponed at the request of the Member States who had originally proposed these amendments at CHRIS/12. In spite of the fact that the closing date had been suspended, a number of Member States voted and commented on the proposal. These comments are contained in CHRIS/13/7B.

He reminded that the initial proposal to allow SENC distribution as an option arose because some Member States felt that it should be up to their National Authorities to decide which format they should allow their ENC data to be distributed in. The proposal was reconsidered at WEND/6 and at the IHO Industry Workshop in Monaco on 28-29 June 2001. It was again on the agenda of this meeting.

The Chairman then drew attention to CHRIS/13/7C containing a proposed new wording for S-52, paragraph 3.3 and a Technical Resolution, based on the Premises and Safeguards drafted at the 12th CHRIS Meeting, to ensure that any SENC Delivery was treated as an additional option to the distribution of ENCs in S-57 format.

Denmark (Ole BERG) believed that the problem was the type of control by a coastal State over vessels. IHO only makes recommendations and the coastal State may choose to do otherwise. SENC delivery would provide options and the coastal State must decide. Germany (HH) agreed that final decision was made by the National Maritime Authority. Norway (FK) added that distribution should be by both SENC and ENC, and that the proposed wording change should allow for that.

Australia (RW) questioned the need to ask for MS' approval on a change to S-52. IHB (MH) confirmed that MS had been requested to endorse the latest editions of S-52 and S-57 at the XVth IHC (1997).

The Chairman suggested, and this was agreed, that a small group be formed, led by Canada (Michael CASEY), to consider the new wording for § 3.3 of S-52 and the proposed new TR A 3.11, as contained in CHRIS/13/7C, and to report on any comments or additional proposed changes to the Meeting on the following day. As a result, revised wordings for § 3.3 of S-52 and the new TR A 3.11 were proposed for discussion. After some further refinements, these texts were agreed by the Meeting, as reflected in Annexes E and F.

After much debate, the Chairman summarized the deliberations as follows:

The Meeting recommends the adoption by IHO Member States of the revised paragraph 3.3 of S-52, as in Annex E, and the new Technical Resolution A 3.11, as in Annex F, which must be considered and approved at the same time. In essence the changes will ensure the following:

- 1) The official version of digital chart data is the ENC in S-57 format;
- 2) Hydrographic Offices are required to ensure that their ENC data is always available in S-57 format;
- 3) National Authorities may decide, at their discretion, to also allow their ENC data to be distributed in a SENC format.

It was agreed that the IHB, through a new CL, would ask MS to vote on the above recommendation. Results of the vote cast by CL 15/2001/Rev.1 would be disregarded. On request from UK (CD), it was agreed that the list of "Premises and Safeguards", as approved at CHRIS/12, would also be enclosed with this CL. He indicated that if their maritime authority does not agree with SENC distribution, UK will vote NO to the CL. Spain (Angel CHANS), although agreeing that SENC distribution could be an option, did not see the need for changes to S-52 and a new TR.

Action:

- **IHB** to issue a CL to ask MS to vote on the proposed changes to S-52 and new TR A 3.11.

8. ENC SECURITY SCHEME(S)

Docs: CHRIS/13/8A - CL 15/2001 extract on ENC Security Scheme
CHRIS/13/8B - CIRM Letter of 24 May 2001 to IHB
CHRIS/13/8C rev.1 - Standardisation of Data Protection for ENC's (Australia)
CHRIS/13/8D - ENC Security Schemes (IHB)
CHRIS/13/8E - PRIMAR ENC Security Scheme
CHRIS/13/8F - The Canadian Experience Implementing the PRIMAR Security System

The Chairman drew attention to the proposals in the above Australia's paper. Germany (HH) noted that the paper addresses two issues, i.e. 1) The adoption of the PRIMAR Model as the IHO recommended model; and 2) How the scheme will be administered. Australia (RW) indicated that it is unlikely that they will join PRIMAR. They therefore will probably use their own scheme or the IHO recommended scheme.

PRIMAR (Robert SANDVIK) felt that feedback from Canada on experience to improve system was necessary and Canada (Mike CASEY) was asked to comment on their PRIMAR Trial (Doc. CHRIS/13/8F). He answered that it took nine month to implement the PRIMAR Security Scheme at the CHS and it was still not a turnkey system. With the other aspects to be addressed, it took one year in total. He stated that paper in CHRIS/13/8F gives the feedback requested. Each Member State decides on method of security and the world is moving toward facilitated security systems as technology becomes more readily available. HOs must base decisions on facts.

Norway (FK) asked how would encryption schemes affect SENC distribution? Italy (RLP) informed that they have conducted trials with distribution of encrypted SENC and feedback was awaited. CIRM (TS) said that a distributor would decide on a SENC security scheme. The HO would pass encrypted ENC to distributors. Australia (RW) felt however that ENCs made available to distributors, for SENC delivery, would be unencrypted. Norway (FK) stated that the SENC distributor would encrypt data and this was not an issue for CHRIS to consider.

UK (CD) expressed support to the Australian paper. He however asked what would the time taken

on weekly basis be, should the IHB becomes the security administrator? PRIMAR (RS) answered that this should not be cumbersome as there would only need to change anything if new ECDIS manufacturers join.

Germany (HH) asked who is responsible for distribution of security information? PRIMAR (RS) felt that it was for IHB to inform manufacturers. He added that a system administrator is needed who would talk to and confer with all members of the scheme. He agreed with some of Canada's recommendations.

CIRM (Mike RAMBAUT) observed that there should be only one standard system, as advised in the letter in CHRIS/13/8B. Norway (FK) stated that data protection was necessary for safety but Australia (RW) felt that the IHO does not have the authority to make it mandatory. Germany (HH) noted that the IMO does not address security systems.

Germany (HH) suggested that PRIMAR, Australia and Canada, as experts, should investigate the use of the PRIMAR system. Australia (RW) declined as, although they had raised the paper, they were not experts. On proposal by Canada (MC), PRIMAR (RS) accepted to chair the group. Australia (RW) presented draft Work Directive for an IHO Data Protection Scheme Advisory Group, for consideration by the Meeting.

After lengthy discussion, the Chairman summarized as follows:

The Meeting supported the concept of a single and optional IHO ENC data protection mechanism based on the PRIMAR Security Scheme. It was agreed that a small, expert Advisory Group, led by PRIMAR and with Work Directive as in Annex G, would develop an IHO ENC data protection kernel modelled on the PRIMAR Security Scheme and investigate the implications for the IHO/IHB, in particular if, as it was suggested, the IHB becomes the Security Scheme Administrator and assumes responsibility for the maintenance of the above kernel. The advisory group was to report back to CHRIS (via the IHB) before the end of 2001. The IHB would then circulate the recommendations of the Advisory Group and seek endorsement and further action as appropriate.

Actions:

- ***PRIMAR***, as Leader of the Advisory Group, to report back to the IHB by end of 2001 with a recommended course of action.
- ***IHB*** to circulate the recommendations and seek endorsement and further action as appropriate.

9. STATUS OF IEC 61174

9.1 IHO ENC and RNC Test Data Sets

Doc: CHRIS/13/9.1 - RNC Test Data Set (BSB Format)

IEC (Mike RAMBAUT) informed the Meeting that Edition 2 of IEC 61174 had just been published. The availability of appropriate IHO test data sets for ENC and RNC was therefore necessary, for type-approval purposes.

UK (CD) stated that production of test data sets for ENC and RNC (HCRF format) by the UKHO was close to completion. IHB (MH) added that a test data set for RNC (BSB format) was awaited from USA-NOAA (through the commercial company Maptech). Work should be completed, and all test data sets advertised and/or posted on the IHO website, by end of 2001. Eventually, these test data sets would also be assembled on a CD-ROM to be made available from the IHB as S-52 Appendix 4.

Actions:

- ***UK*** to complete the IHO Test Data Sets for ENC and RNC (HCRF format).
- ***USA-NOAA*** to complete the IHO Test Data Set for RNC (BSB

format).

- **IHB** to advertise the IHO Test Data Sets on the IHO Website, when they are ready, and to produce S-52 Appendix 4.

9.2 IEC TC80, e.g. WG7

Doc: CHRIS/13/9.2A - Report on IEC TC80/WG 7

In the absence of the Chairman of WG7, Dan MADES (USA-USCG), IEC (MR) presented a report on the activities of IEC TC80. He indicated that, if necessary, the IEC could propose an Agenda Item for the next CHRIS Meeting.

Portugal (Luis PAIS) requested clarification on how the new test data sets would affect type-approval for ECDIS? The Chairman explained that they would have no impact on systems already type-approved.

10. PROJECTS OF INTEREST TO CHRIS (e.g. SHARED)

Doc: CHRIS/13/10A - Implementation of SHARED concept in the Caribbean

The Chairman drew attention to the above paper, noting that his author, Dave Enabnit (USA-NOAA) was unable to attend this meeting. The paper describes the development and implementation of a plan for extending the SHARED concept into the Caribbean and Gulf of Mexico (CGM) region. Ideally, SHARED would be an interim step toward WEND. The project would be based on multi-fuelled ECDIS making use of ENC's and RNC's. One of the primary aims of the project would be to stimulate ENC production, by focusing on the INT chart scheme for CGMHC, which was nearly complete. The project, for which draft Terms of Reference are being prepared, is coordinated by NOAA.

Australia (RW) reported briefly on the SHARED project in southeast Asia. He mentioned that dual-fuelled ECDIS sea trials had successfully been conducted between Japan and Korea. He added that integrated ECDIS-AIS trials were included as well.

CIRM (TS) reported on the Norwegian Maritime Geodata Demonstrator (NMGD) Project, which was initiated by the NHS in order to establish an operational maritime geodata service for Norwegian waters. NMGD includes representation from companies and organisations with interests in the development and production of electronic chart systems and related activities. The project has now been running for more than 3 years and feed-back is being obtained from the setting-up of an operational real-time service on MIO objects (tides, currents, wind and waves), as well as the integration of AIS/VTS functionality in an ECDIS.

The meeting took note of the impending Conference on Port and Maritime Technology and Development scheduled to be held in Singapore in October 2001.

11. CONFERENCES OF INTEREST TO CHRIS

NATO Conference

Doc: CHRIS/13/11A - Report on NATO Conference

The Chairman reported on the NATO Conference (Brussels, Belgium, 20 June 2001), noting that a number of HO's were also represented. Matters of interest to the IHO related to the utilization of hydrographic and coastal data in a military environment and the consideration necessary to ensure that unnecessary environmental impact is made during military operations. The integration of hydrographic and other data was emphasized, indicating the importance of better utilization of data held by Hydrographic Offices in the wider concept of capacity building.

UK Hydrographic Society Conference

Doc: CHRIS/13/11B - Report on the UK Hydrographic Society Conference

The Chairman reported on this Conference (Norwich, UK, 27-29 March 2001) and requested that better HO representation should be considered. The Conference covered a wide range of hydrographic data applications, including the Future of Hydrography, Electronic Charting, and Bathymetric Applications. Also, a workshop was held during the Conference on "Electronic Charting and Publication Service".

US Hydrographic Society Conference

Doc: CHRIS/13/11C - Report on the US Hydrographic Society Conference

The Chairman reported on this Conference (Norfolk, Virginia, USA, 21-24 May 2001), which was attended by many HOs' representatives. The technical program included 46 high quality papers. A highlight was the keynote address by Dr. Peter Ehlers, BSH President, on WEND. Also, a workshop was held during the Conference on "Brownwater Electronic Charting".

There were no comments on the above reports.

12. OPEN ECDIS FORUM

Docs: CHRIS/13/12A - Report on OEF Activities

CHRIS/13/12B - Greater use of the Internet and OEF for CHRIS WG'S

The Chairman drew attention to the above first paper reporting on OEF Activities. Changes in the administration of the OEF were highlighted. In August 2001, the OEF server has been moved from SevenCs, Germany, to the University of New Hampshire (USA) under the supervision of Lee ALEXANDER. The funding for this transition was provided by the IHB. The OEF Board of Patrons, chaired by Gert BÜTTGENBACH, is back to six members, following resignation of Capt. Henrik SOLMER of A. P. Moller. The OEF is again looking for a person willing to serve who represents the point-of-view of the shipping industry. The UKHO contacted the OEF to investigate whether the Additional Military Layer (AML) extensions to S-57 could be registered with the OEF. The C&SMWG used the OEF quite successfully in preparing for their most recent meeting.

The second paper CHRIS/13/12B, jointly prepared by Australia, Canada and UK, was then considered. It emphasises that Specialist discussion groups are being established on the OEF as a means of obtaining a wider perspective to the work of CHRIS WG's. In addition, the establishment of specialist OEF discussion groups has the potential to progress much of WG work programs traditionally conducted during formal meetings. An important role when using the OEF to discuss matters is that of the discussion leader. In particular, he has the responsibility to coordinate and effectively chair the discussion as it progresses and is expected to summarise and forward the outcomes of discussion to the relevant IHO forum. In recent times the following CHRIS WG's have used the OEF successfully to progress their work: SNPWG, TAWG, TSMAD and C&SMWG.

Australia (RW) invited participants to comment on this paper, further noting that support from CHRIS was requested in its paragraph 10, which reads:

"The Committee should:

- a. **Support** the increasing use of discussion groups on the OEF to progress CHRIS WG activities;*
- b. **Encourage** the chairs of WG's to establish relevant discussion groups to progress work in hand, particularly in advance of or as a replacement for, work otherwise conducted in formal meetings;*

- c. ***Stress the role of discussion group leaders to identify likely contributors, coordinate and chair discussion as they progress and to summarise and forward the outcomes of discussions to the relevant IHO forum; and***
- d. ***Ensure that this development is reflected in the CHRIS Report to the XVIth IH Conference.***

The Meeting supported the proposal and agreed that all CHRIS WGs' Chairmen should be encouraged to make use of the OEF as far as possible, by establishing relevant discussion groups to progress their work and nominating appropriate leaders.

It was suggested and agreed that a CSC discussion forum on the OEF could help progressing CSC issues. The IHB would contact the CSC Chairman on the matter.

Following a request from Greece (Alexander MARATOS), UK (CD) confirmed that a person proposing a subject for discussion on the OEF, in agreement with the WG Chairman, would normally act as co-ordinator/leader.

Actions:

- ***CHRIS WGs' Chairmen to make use of the OEF as far as possible, by establishing relevant discussion groups to progress their work and nominating appropriate leaders.***
- ***IHB to contact the CSC Chairman, with a view to possibly establishing a CSC discussion forum on the OEF.***

13. LIAISON WITH INDUSTRY (CHRIS/13/13.1A)

Docs: CHRIS/13/13.1A - Report on the June 2001 Marine Industry Workshop

The Chairman reported on the Marine Industry Workshop held at the IHB on 28-29 June 2001. Topics addressed by the Workshop included the aspects and considerations involved in the development and maintenance of IHO standards, the consideration of mechanisms for better and more informed decision-making within the IHO, the appropriateness of the IHO Presentation Library, the SENC Delivery option, security schemes for ENC data, type-approval issues, and inland ECDIS.

He noted that participation to the Workshop was both vigorous and constructive. The IHO and the IHB in particular gained a significant amount from the comments made. Opinions expressed both during and after the Workshop indicated that the holding of Workshops of this nature was extremely valuable.

He indicated that IHB now has all papers presented at the Workshop and hope to prepare Proceedings if personnel resources allow. He concluded that IHB intends continuing with these workshops.

Actions:

- ***IHB to finalize and distribute the Proceedings of the 2001 Marine Industry Workshop.***
- ***IHB to advise of the dates for the 2002 Workshop.***

14. REPORTS BY CHRIS WORKING GROUPS

14.1 Transfer Standard and Applications Development (TSMAD)

Doc: CHRIS/13/14.1A - Report on TSMAD Activities

UK (CD), Chairman of TSMAD, presented the above paper. He mentioned in particular the following:

- Edition 3.1 of S-57 was not adopted in November 2000, as had been the intention, but was "made officially available", with both Edition 3.0 and Edition 3.1 co-existing until further notice. TSMAD members agreed that it was premature to give CHRIS any advice on when the IHB should request Member States to cease producing Edition 3.0 data.
- The "Use of the Object Catalogue for ENC" (Ann. A to App. B.1 of S-57) has been reworded to ensure that the meaning of each clause is unambiguous (clarification in the use of "must", "should" and "may"). TSMAD members agreed that this document should have a mandatory status.
- A sub-group of TSMAD which will liaise with ISO TC211 over the development of S-57 has been formed. The Chairman is Don Vachon of the CHS.
- In accordance with the newly agreed ToR for CHRIS WGs, Chris Drinkwater was formally confirmed Chairman of TSMAD and Don Vachon was elected Vice-Chairman.
- A new document "INT1/S-57 cross reference" (Ann. D to App. B.1 of S-57) has been included in Edition 3.1.

Germany (HH) requested clarification on the period that both Editions 3.0 and 3.1 were in force. Who is in charge with respect to 3.1 interfaces and advise to industry? UK (CD) replied that both 3.0 and 3.1 would be in force and accommodated until further notice. He suggested that a date was needed for software engineers to meet.

UK (CD) also stated that the issue as to when Edition 3.1 is to be used would be decided at the next TSMAD Meeting (Cape Town, South Africa, December 2001). He suggested that an IHB Circular Letter would then be required, explaining the situation and asking when Member State can produce Edition 3.1 data only. He further noted that Industry opinions were essential.

CIRM (MR) noted that Industry required good warning of future changes and small changes do not justify cost to Industry. He stated that closer liaison with Industry in regard to changes was necessary.

Norway (FK) felt that CHRIS WGs should develop procedures and policy with respect to promulgation of new standards and structure procedures. Australia (RW) referred to the C&SMWG procedures for obtaining opinion from those affected, before taking the developments too far. The Chairman concurred that procedures for updating IHO standards should be formalized and documented.

An *ad hoc* Drafting Group, led by Norway (FK), was set up to develop procedures for updating IHO standards. As a result, a proposal for "Principles and a Set of Procedures for Making Changes to IHO Standards" (see Annex H) was presented to the Meeting on the following day for consideration.

In introducing this paper, Norway (FK) stated that it would be the IHB responsibility to ensure that particular issues go to the correct Committee or WG. The Chairman confirmed that IHB would distribute any relevant documentation.

UK (CD) agreed that this document could be used by TSMAD and he suggested that a paper be submitted to TSMAD on the matter. Australia (RW) stated that as the Proposal affects all CHRIS WG's and not only TSMAD, he suggested that the paper should be sent to all WG's. Canada (MC) felt that this document could be a formal mechanism to make changes but while the procedure may not meet the requirements of other IHB Committees and WGs, it should suit CHRIS requirements. He recommended that

the Document be accepted for CHRIS WG's.

The Proposal, as in Annex H, was accepted by CHRIS. It was agreed that the IHB would circulate the Proposal to other IHO Committees and WGs for information and with a recommendation that, if possible, the procedure for the updating of IHO standards be uniform.

Actions:

- **CHRIS WG's Chairmen** to refer to the agreed Principles and Procedures, as in Annex H, when updating IHO Standards.
- **IHB** to circulate the Proposal to other IHO Committees and WG's.

14.2 Colours and Symbols Maintenance (C&SMWG)

Docs: CHRIS/13/14.2A - Report on C&SMWG Activities
CHRIS/13/14.2B – Report of 12th Meeting of C&SMWG
CHRIS/13/14.2C – Urgent Funding Requirement for C&SMWG

At the request of Australia (RW), representing the Chairman of C&SMWG, consideration of this item was deferred to the following day to allow participants to read the just distributed papers CHRIS/13/14.2B and 14.2C. They both resulted from the 12th C&SMWG Meeting, which was held on the preceding week.

Australia (RW) presented the first two papers above, noting in particular the following:

- Dr Mathias Jonas (Germany) was elected new Chairman of C&SMWG, in replacement of Mr Julian Goodyear (Canada) who resigned. At the same time, Mr Brent Beale (Canada) stepped down as Technical Coordinator, and Mr. Chris Roberts (Australia) indicated that he will only continue as Secretary until the next IHC (April 2002). Mr Mike Eaton (Canadian HS (retd)) and Mr Steve Grant (Canadian HS (retd)) have indicated that they are prepared to act as temporary Technical Coordinators to assist the Chairman, but for a very limited period of time only. There are no obvious volunteers to take up these positions.
- The WG is in a critical financial position and urgent funding action is required to ensure C&SMWG activities can continue (see CHRIS/13/14.2C).
- It is intended to issue a new edition 3.3 of the Presentation Library late in 2002, which will incorporate a large number of extant deferred amendments. In the longer term, an extensive revision of the PL with the specific aim of reducing and simplifying the contents of the documentation and the ECDIS display requirements will result in PresLib e4.0 (target issue date: 2005).
- A number of changes and initiatives that may permit a reduction in the number of colour palettes required for ECDIS and will also lead to the earlier use of fully-compliant flat panel displays in ECDIS, are under consideration.

The Chairman stated that IHB was concerned about the lack of commitment by MS towards C&SMWG and endorsed the request by C&SMWG for greater support to the WG activities and better attendance of meetings by Member States.

The Meeting agreed that MS should be encouraged to directly support C&SMWG, particularly by providing office bearers.

Australia (RW) stated that C&SMWG also asked for guidance on the appropriate use of ENC and RNC, reminding that under current regulations an RNC can only be used in the absence of a published ENC.

Clarification was requested on the subject of the use of a small scale ENC, if this is the only ENC available in the area, even though a large scale RNC was available. He (RW) felt that the IHO should provide advice to IMO that the overscale alarm must be adhered to.

Norway (FK) did not understand why there was a problem. He stated that as a Coastal State decides on the use of ENC's, it should not classify a small scale ENC as an official ENC, i.e. for navigational purposes. Denmark (OB) noted that a ship should not be allowed to sail without the necessary charts. Italy (RLP) concurred that the National Administration of a Coastal State must decide if the voyage is possible with the charts available on a vessel.

Australia (RW) pointed out that the Flag State determines what ships may carry and this depends on Coastal State Policies.

The Meeting decided that no action was required on the matter.

Australia then drew attention to paper CHRIS/13/14.2C and summarized this document, as follows:

- Unlike any other IHO working group, C&SMWG can only achieve a large part of its activities through the use of external agencies and parties with specialist skills and capabilities. These agents are paid under contract and report to the WG through its Chairman and its Technical Coordinator. Until now, these contracted activities have been funded directly by a small group of MS. Canada had contributed more than \$US1M and other MS (Australia, Germany, UK and USA) had contributed about \$US0.5M in total. Other funding has come from the sales of the IHO PL (about \$US0.07M).
- However, individual MS who previously funded C&SMWG activities individually can no longer devote significant funds to what is actually a collective IHO commitment. PL fund stands at less than \$US 30,000 with little prospect of any growth.
- There is continuous pressure being placed on Type Approval Authorities, and hence the C&SMWG to ensure that the PL and its contents remain current and relevant. If the IHO is unable or unwilling to undertake this role, then it will inevitably pass to another authority or organisation.
- It is estimated that the immediate high priority commitments (from now to May 2002) would require approximately \$US40,000. Continuation work (medium and low priority) over subsequent years is estimated at \$US60,000 per annum. This includes provision for contract work and travel expenses.
- It is felt that the only option that will ensure adequate and reliable funding for the continuing operation of the C&SMWG and its activities is for the IHO to make an appropriate financial allocation under the relevant IHO Work Programme. In the absence of additional funding the work of the C&SMWG, and hence IHO involvement in the presentation and display of charting information in ECDIS, would cease in the not-too-distant future.

To a query from Denmark (OB) on how the work done by contractors was checked, as there seemed to be no one in the IHO with expertise, it was clarified that the C&SMWG Technical Coordinator (Brent Beale, CHS, until September 2001) is the technical supervisor for the work contracted out.

Canada (MC) felt that we should realise that it was not digital cartography that was changing but user requirements. ECDIS was no longer only for navigation but it now should provide information to aid safety of navigation, e.g. radar coverage and other inputs. IHO should not dictate how information on ECDIS is to be displayed. The user should define this and Industry should develop the display standard. Denmark (OB) stated that, as ENC was basically a GIS, the users should define their own requirement. Australia (RW) said that while Edition 4 would address these requirements, the WG could not just stop, as it still had work to

complete.

The Chairman said that the IHB would attempt to find money and approach Member States for support in the 2002 budget. He also noted that long-term financial support from the European Union might be possible.

UK (CD) suggested that CIRM be approached to see if they could provide funding. CIRM (MR) answered that while CIRM did not have money, Industry might assist although they may prefer to develop their own library.

On request from Germany (HH), Australia (RW) confirmed that the required amount would reduce as work is completed.

Norway (FK) felt that there should be further investigation as to the need for a PresLib e4.0 and that there should not be a requirement to put pressure on IHO budget.

The Meeting agreed that it was necessary for the work to continue and that the IHB, as a matter of urgency, should seek to obtain funding, e.g. investigate all the options open to the IHO to fund the work of the C&SMWG.

Actions:

- ***IHB*** to encourage MS to directly support C&SMWG, particularly by providing office bearers.
- ***IHB*** to investigate all the options open to the IHO to fund the work of the C&SMWG.

14.3 Technology Assessment (TAWG)

Doc: CHRIS/13/14.3A rev.1 - Report on TAWG Activities

Canada (MC), Chairman of TAWG, presented the above Report. Recalling that the objective of TAWG is "to assess the potential of present and developing information technology with respect to applications within the scope of CHRIS, and advise CHRIS accordingly", he summarised the TAWG work over the past year as follows:

- High resolution Flat Panel Displays (FPD) – Sufficient technological progress has been made in the field of FPDs to warrant a re-examination of this technology as a substitute for CRTs in ECDIS. The review is warranted by the increasing use of FPDs in mainstream computing and the resulting improvements in colour accuracy, reliability, cost, footprint size and availability. Progress in FPDs will impact the colour standard in S-52 which is now specific to CRTs. A switch to FPDs is seen as progressive and evolutionary by system manufacturers and end-users. FPD performance for ECDIS application was being assessed under CHS contract. An interim report was appended to CHRIS/13/14.3A.
- E-Commerce - No work has commenced on this topic, although it is still planned to establish a user group on the OEF.
- Print on Demand (PoD) - Under the leadership of Dave Enabnit, US-NOAA, a PoD interest group has been formed via the OEF.

There were no comments.

14.4 Standardization of Nautical Publication (SNPWG)

Doc: CHRIS/13/14.4A WP2 - Report on SNPWG Activities

Australia (RW), Chairman of SNPWG, presented the Report, as summarised below.

- For the sake of clarity, Nautical Publications were defined as follows:
 - a) NP1 – Printed paper publications.
 - b) NP2 – Digital publications based upon existing paper publications and issued as stand-alone products.
 - c) NP3 – Digital dataset(s) fully compatible with ECDIS that serve the purpose otherwise provided by NP1 or NP2. NP3 would be issued in the form of a compiled database intended primarily to work within an ECDIS.
- SNPWG's work focused on Nautical Publications of types NP1 and NP2. A comprehensive review of the existing IHO Technical Resolutions pertaining to NPs was undertaken to help improve the structure, content and format of NPs and to provide guidance for the concurrent publication of digital NPs. The relevant TRs are A 2.11 to A 2.15; A 7.1 to A 7.6; C 1.1 to C 1.9; C 2.1 to C 2.8; and C 3.3 to C 3.21. The proposed amendments were included at Annex A to the Report as a revised text with the revisions highlighted. A clean copy of the revised text was at Annex B.
- The data format requirements for Nautical Publications of type NP3 remained to be defined. Revised SNPWG ToR that reflect these requirements and the completion of other work were proposed at Annex C of the Report. New membership for SNPWG was necessary to address NP3 requirements. He (RW) resigned as Chairman.

Australia (RW) further mentioned that, as the existing ToRs for SNPWG did include digital publications of type NP3, he had asked for proposals but there had been none forthcoming except one from Germany. He therefore suggested closing the WG down and constituting a new group, i.e. of interested parties, based on the proposed revised ToR.

Sweden (Göran Nordstrom) stated that they would appreciate guidance as they wish to produce only digital publications. France (JLB) felt that there was insufficient guidance for an International standard for Nautical Publications and that each HO would have its own standard. Germany (HH) stated that IMO Requirements for carriage of nautical publications should be considered; and that there was a need to develop ECDIS related Nautical Publications. He agreed that, should SNPWG be disbanded, a new body would be required to investigate NPs of type NP3.

Canada (MC) and Germany (HH) supported the proposed changes to SNPWG's ToR to address NP3. Answering a query on who was developing NP3, Australia (RW) said that the BSH has developed a proposal for a new format of Sailing Directions suitable for encoding in S-57 (extended), and the UKHO has undertaken a study of a data scheme to capture data.

The issue was raised as to whether TSMAD could be tasked to develop specifications for NP3. Australia (RW) said that informal talks with the Chairman of TSMAD revealed that this WG had too much work of its own at the moment. UK (CD), Chairman of TSMAD, said that he was unsure of the role of TSMAD in NPs. He did not believe that it was a TSMAD issue but that of specialists in NPs. He felt that TSMAD should not be asked to make rulings about the way ahead in specialized fields.

After discussion, the Meeting:

- agreed that International (INT) Nautical Publications were not an appropriate requirement for so-called NP1 and NP2 products (this was however opposed by France);
- endorsed the proposed amendments to the relevant IHO Technical Resolutions;

- agreed that the SNPWG should now concentrate on defining the data format requirements for NP3; and
- approved the revised SNPWG Terms of Reference that reflect the NP3 requirement and the completion of other work, as in Annex I.

Australia (RW) stated that he would inform SNPWG members about the outcome of this Meeting and of his intention not to continue as Chairman in favour of someone with an interest and expertise in NP3 issues.

Actions:

- ***IHB*** to seek MS approval of the proposed amendments to TRs.
- ***IHB*** to invite MS to consider participation in the SNPWG and nominate appropriate representatives who are able to contribute to NP3 issues.
- ***IHB*** to request existing SNPWG members to confirm their continuing participation in the WG.

15. LIAISON WITH OTHER GROUPS

15.1 IHO Chart Standardization Committee (CSC)

Docs: CHRIS/13/15.1A - Re-Structuring of IHO Committees and Working Groups: the Role of CSC and its Relationship with CHRIS
CHRIS/13/15.1B - Report on CSC Activities, in Relation to CHRIS

France (JLB) reported on the above two papers. In particular, he drew attention to the following proposal by the CSC Chairman, Peter Cox (UK), in CHRIS/13/15.1A:

“The CSC has a continuing valuable contribution to make to future charting whether it be paper or electronic, particularly to provide the reasons why and approach to be adopted to the basic content of chart information. To assist the IHO achieve its objectives, it is important that future work by the IHO’s Committees and Working Groups is more fully integrated. To ensure that the CSC’s work is integrated with that of the existing CHRIS working groups, I propose that the scope of CHRIS be extended to incorporate the work detailed in the CSC’s terms of reference and to change the status of CSC to a Working Group of CHRIS from the next IHC in April 2002. The current on-going changes in marine cartography mean that it is no longer feasible for the CSC and CHRIS to continue in parallel; the closer liaison introduced to date, although improving the situation, is not delivering all the coordination required. I believe the restructuring proposed to be in the interests of all concerned.”

Germany (HH) felt that as the Chairman of CSC had proposed that CSC become a CHRIS WG, this Meeting should consider the issue prior to the 16th International Hydrographic Conference.

There were no objections and the Meeting was in favour of the proposal.

The Chairman stated that the ToR for the new WG would be looked at by both CHRIS and the CSC. Germany (HH) suggested that the CSC make proposal to the 16th IHC to extend the ToR of CSC. This was agreed.

The Meeting decided to endorse the CSC proposal when it is submitted to the 16th IHC.

Actions:

- *CSC to make a proposal to the 16th IHC, for CSC to become a WG of CHRIS.*
- *CSC to prepare ToR for the new WG, for consideration by both CSC and CHRIS.*
- *IHB to prepare revised ToR for CHRIS, for consideration by CHRIS, then MS.*

15.2 ISO/TC211 (Geographic Information/Geomatics)

Doc: CHRIS/13/15.2A - Report on the Activities of ISO/TC211 in Relation to CHRIS

IHB (MH) introduced the above document. He noted that ISO/TC211 was developing a suite of geographic information standards that address the entire field of geographic information. The standards developed by ISO/TC211 are encompassed in the ISO 19000 series of documents which comprises a family of publications that can be divided into the following groups: Framework and Reference Model; Profiles and Functional Standards; Data Models and Operators; Data Administration; and Geographic Information Services. ISO/TC211 work has progressed over the past year, and many of the standards and technical reports have reached the editorial Committee Draft stage. Twelve of these standards have already been published as **Draft International Standards**, **International Standards** or **Technical Reports**

As stated in 14.1 above, a sub-group of TSMAD was established in April 2001 to investigate how future extensions to S-57 can be harmonized with, and take advantage of, the ISO/TC211 base standards. Several tasks were assigned to the sub-group including: the registration of the S-57 object catalogue with ISO, and the inclusion of imagery and gridded data components in S-57.

ISO TC211 is also commencing work on the establishment of a formal process to handle international registries. This will facilitate the harmonization of common/overlapping elements of standards such as the DIGEST Feature Catalogue (FACC) and the S-57 Object Catalogue.

Discussion was then held on the progress of harmonization of S-57 with the DGIWG Standard DIGEST. It was suggested that such harmonization would be achieved through alignment of both S-57 and DIGEST with ISO/TC211 Standards. Notice was also given of a DGIWG Meeting, to be held in conjunction with NATO.

IHB (MH) informed that the next ISO/TC211 Meeting would be held in Adelaide, Australia, in October 2001.

15.3 ICA Commission on Spatial Data Standards

Doc: CHRIS/13/15.3A - Report on activities of ICA Standards Commission

IHB (MH) presented the above document, as summarized below.

Over the past year, this Commission of the International Cartographic Association has been working on two subjects: 1) Metadata Standards; and 2) Spatial Data Infrastructures (SDI).

- **Metadata Standards** - The Commission worked on the completion of a global study of existing metadata standards. After a set of characteristics, enabling the assessment of these standards, had been developed by the Commission, an assessment of all known metadata standards in use worldwide – including that of ISO/TC211 - was carried out, against the agreed characteristics. The result of this work will eventually be published in an ICA Metadata Book.
- **Spatial Data Infrastructures (SDI)** – The Commission has started conducting the following work

in relation to SDI:

- Publish a summary of the current status of SDIs around the world, giving for each: a brief history, their scope, the status, description of the content, funding mechanisms, and contact details.
- Define a preliminary list of technical characteristics for assessing SDIs, e.g. truth in labelling, fitness for use in applications, validation of data sets, and quality for SDI data sets.
- Identify the gaps and relevance of ISO/TC211 and OGC standards to SDI, i.e. what are the standards needed for SDI? What are the existing or planned standards? What are their gaps?

Answering a query from Netherlands (René Van GEESBERGEN) on who comprised this Commission, IHB (MH) indicated that it was made up of members from Academia, National Geographic Institutes, and the IHO.

IHB (MH) informed that the next meeting of the ICA Spatial Standards Commission would be held in Brno, Czech Rep., in July 2002.

15.4 Other Groups, e.g. IMO, IALA

Doc: CHRIS/13/15.4A - Relations with International Organizations

The Chairman introduced the above document providing an overview of IHO relations with IMO, IALA, IEC, and CIRM.

- IMO - An IHB Director represented the IHO at IMO Council, MSC and NAV Meetings. This contributed to resolving most of the contentious items in regard to the revision of SOLAS Chapter V. In this regard, it was noted that a better representation of the National HOs in the IMO delegations could assist the IHB in promoting IHO views. The IMO Secretariat consulted the IHB on hydrographic and charting issues, e.g. on proposed traffic separation schemes. In addition, the IHB worked in close cooperation with the Director of the IMO Technical Cooperation Division and other related international organisations, e.g. IALA, in the promotion and extension of maritime services in developing States, e.g. Namibia.
- IALA - The IHB worked in close cooperation with IALA in both technical and development areas of common interest, e.g. to improve the provision of maritime information services. The IHB and IALA were about to enter into a MoU and agreed that reciprocal invitations would be extended to allow attendance at committee and working group meetings of the respective organizations.
- IEC – IHO and IEC TC80 continued to work closely on the establishment of IEC testing standards for ECDIS (IEC 61174), through participation of HOs' representatives in TC80/WG7 activities. A new TC80/WG 13 has been established to coordinate and harmonise all the various digital displays that are within the responsibility of TC80. ECDIS being one of these displays, there was therefore an even greater need for cooperation between the IHO and IEC. Finally, the setting-up of an IHO-IEC Harmonizing Group on Marine Information Objects (HGMIO) was in progress. TC80 already approved the proposed ToR for HGMIO, subject to be discussed later at this Meeting (item 18). As with IALA, Observer status has been reciprocally accorded by both organisations.
- CIRM - This international association of equipment or software manufacturers related to maritime navigation has been a forum for the IHB to obtain industries points of view in an organised manner. CIRM was granted Observer Status at CHRIS and, at the discretion of the Chairmen, with its Working Groups.

There were no comments.

16. VECTOR DATA DEVELOPMENT

16.1 European RENC (PRIMAR)

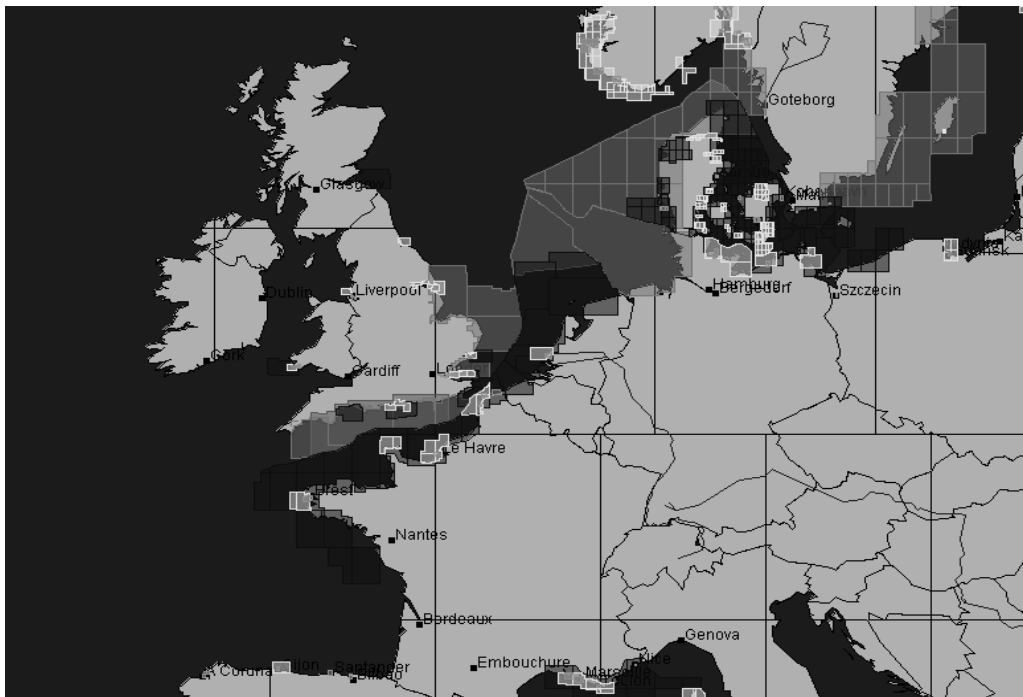
Doc: CHRIS/13/16.1A - PRIMAR Report to CHRIS

PRIMAR (RS) gave a presentation on the European RENC activities, as summarized below.

Since the 12th CHRIS Meeting, Spain and Belgium had joined PRIMAR as Cooperating HOs. The Russian company Transas was a new data partner as exclusive distributor for Russian ENC data. An S-57 Ed. 3.1 service was provided by PRIMAR from 1st July 2001. Liaison was established with a number of HOs outside Europe, notably in the Far East, in South America and in South Africa. The Virtual PRIMAR Network (VPN) was now in use by most CHOs for uploading, releasing and downloading ENC data. Marketing activities included the PRIMAR Chart Catalogue campaign “*Navigating your way around the world of official ENC’s*”, the holding of seminars with distributors, participation in exhibitions and conferences, and publication of an Outlook Newsletter.

As of 1st September 2001, PRIMAR had 41 authorized distributors in 19 countries. ENC data on distribution from PRIMAR covered the English Channel and large portions of the North Sea and the Baltic Sea, as illustrated in the chartlet below. The expected availability of ENC cells by end 2001 would be as follows:

COUNTRY											
DE	DK	ES	FL	FR	GB	NL	NO	PL	PT	SE	Total
35	312	55	32	89	99	13	315	8	18	72	1048



Following a query from Australia (RW) asking if the TSMAD list of validation checks (Ann. C to App. B.1 of S-57) was sufficient, PRIMAR (RS) reported that the various validation software derived from this checklist produced different result in some cases.

16.2 Other RENCs

Docs: CHRIS/13/16.2A - MoU for Co-operation within the Mediterranean and Black Sea Virtual RENC
CHRIS/13/16.2B - Status Report on Virtual RENC Development in the MBSHC Area

Italy (RLP) presented the above two documents.

- MoU – A draft Memorandum of Understanding for cooperation within the Mediterranean and Black Seas on a Virtual RENC has been prepared by Italy. In the frame of WEND, the MBS Virtual RENC is defined as “*The regional forum responsible for advancing collaboration between HOs and assisting their development as Issuing Authorities for their own official ENC and official ENC updates in the area of Mediterranean and Black Sea and possibly beyond*”. “Virtual” means that this RENC does not aim at creating independent physical infrastructures, but rather to extend and strengthen cooperation within the regional hydrographic community, dedicated to coordinating and assisting participating HOs in the field of ENC related activities. In establishing the MBS Virtual RENC, the following principles would be adhered to:
 - Definition of harmonized and conterminous national data sets across the region;
 - Definition of a harmonized ENC marketing policy within the region;
 - Implementation of those political and technical exchanges needed to support the objectives of the MBS Virtual RENC.

The MBS Virtual RENC would be directed and administered on behalf of the Participants by an organisation consisting of: 1) The VRENC Committee (VC); 2) The President of the VRENC Committee; 3) The VRENC Coordinating HO (Italy); and 4) The Training Resources.

- Status Report – In order to assess the feasibility of the MBS Virtual RENC, a North Adriatic VRENC Pilot Project involving Croatia, Italy and Slovenia has been set up. It aims at producing a prototype delivery service which is capable of being expanded into a full commercial network supporting the three actors involved in the overall process: 1) Producers (HOs); 2) Distributors (private manufacturers, HOs, etc); and 3) Users (Mariners, land based VTS, etc). To provide a firm basis for real future operations, the planned development would be based on commonly available transmission media, and international standards wherever they exist. Initial steps of the pilot project were to define the prioritised ENC portfolio for the area, based on the existing paper charts, and to identify and set up the requirements for ENC and update coverage (sources material digitisation, hardware/software tools, training and technical support).

In support of the MBS Virtual RENC, a distinct project called MEDCHARTNET has been launched with the objective of providing a Mediterranean network for the exchange of ENC between HOs in order to facilitate the generation of functional and regionally harmonised products and their dissemination.

Greece (AM) observed that these issues would be considered at the meeting of the Mediterranean and Black Sea Hydrographic Commission (MBSHC), to be held on the following week. He added that production and marketing of ENC's are IHO main tasks.

Spain (AC) said that ENC coverage was a very important issue. He felt that HO's should not wait for the formation of a RENC in their region and that they should start distribution of available ENCs as soon as possible, through existing RENC(s). Italy (RLP) noted that the MBSHC had observed the development of the

North European RENC (PRIMAR). He said that technical issues were a CHRIS problem and not a RENC one.

The issue of ENCs crossing nations borders was raised and it was felt that there should be agreement between the MS concerned. Greece (AM) reminded that a MS couldn't be member of two RENCs for the same area.

16.3 ENC Development in HOs represented at the Meeting

*Docs: CHRIS/13/16.3A - IHB CL 31/2001 on ENC Coverage
CHRIS/13/16.3B rev.6 - Report on ENC Development
CHRIS/13/16.3C - ENC Production Experience at the Hydrographic and Oceanographic Service of the Chilean Navy*

The Chairman introduced the above first two documents.

- IHB CL 31/2001 – Following a decision by the 6th WEND Meeting (May 2001) that a “*Study of the availability and compatibility of ENCs to satisfy the worldwide requirements of shipping*” should be conducted, the IHB asked MS to provide detailed information on their ENC production and plans, via Regional Hydrographic Commissions Chairmen. Provision of such information was requested through a questionnaire and graphics/chartlets showing the current ENC coverage. Portugal offered to undertake this WEND study aiming at identifying the gaps in ENC coverage on a worldwide basis, by comparing the existing ENC coverage with the requirements for international shipping, i.e. the main shipping routes. A number of responses to CL 31/2001 had already been received at the IHB, which would be sent to Portugal.
- ENC Development – Reports were provided by Australia, Canada, Denmark, Estonia, France, Germany, Greece, Italy, Japan, Korea (Rep. of), Sweden and USA- NOAA. They would be forwarded to Portugal in support of the WEND Study.

Chile (Gonzalo VALLEJOS) introduced the above third paper reporting on SHOA's experience in setting up an ENC production line. As of August 2001, SHOA had 55 ENCs available covering five major shipping routes in Chilean waters. The paper outlines several important aspects of the general ENC production infrastructure and the processes currently in use. The general policy of SHOA is to provide the maritime community only with ENCs produced from new hydrographic surveys or from rich paper charts with well-known datum. This paper could be a useful reference for those HOs initiating the challenging technological change from paper to electronic chart. SHOA is willing to act as a supporting partner to increase international cooperation on ENC issues having safety of navigation as the final objective. A Spanish version can be requested to shoa@shoa.cl.

Germany (HH) advised of a report on the outcome of an extraordinary meeting on accidents in the Baltic Sea and at which a number of conclusions were reached. Sweden (GN) revealed that this Report was available on Internet.

Estonia (Tõnis SILLANARUSK) reported that they had six ENC cells completed. They anticipated full ENC coverage in Estonian waters by the end of 2002.

16.4 ENC Development in HOs not represented at the Meeting

The only report received at the IHB was that from USA-NOAA which has been addressed in 16.3 above.

16.5 DNC Development in USA – National Imagery and Mapping Agency

Doc: CHRIS/13/16.5A - Report on DNC Development at US-NIMA

In the absence of the USA delegates who were unable to attend, the Chairman drew attention to the above paper from NIMA reporting that its folio of approximately 5,000 nautical charts in DIGEST C – Vector Product Format, was completed in mid-2000. This folio satisfies initial U.S. Navy operational requirements for worldwide navigation. Work to bring the worldwide DNC database up-to-date was on a schedule to be completed about the end of 2004 so as to meet the planned U.S. Navy transition to digital navigation. NIMA ended all traditional hard copy compilation of nautical charts, i.e., DNC is the source for NIMA paper charts. DNC Updating would be based on the “patch” method, i.e., a method whereby changes to the DNC database are identified and only the changes are transmitted to update the base DNC. At-sea testing had been successful using landline connections, satellite transmission and cell phone. Implementation of digital updating for DNC was projected to begin in early 2002. Currently, the DNC is restricted from public distribution, principally due to foreign intellectual property rights. NIMA planned to initiate the gratis release of U.S. waters data to the U.S. public during the latter half of 2001, for GIS use, starting with the U.S. East Coast (DNC 17). For DNC data subject to foreign copyright, release will be at the discretion of the organization with the intellectual property rights.

There were no comments.

16.6 ENC Developments in Inland Waters

Docs: CHRIS/13/16.6A - ENC Development in Inland Waters
CHRIS/13/16.6B - The Inland ECDIS Standard of the CCNR

The above documents were considered by the Meeting.

The first paper reported on a plan by the U.S. Army Corps of Engineers to produce electronic navigation charts of the entire Mississippi River Inland Waterway System. A test product was available on the Internet at www.mvn.usace.army.mil/ENG/s-57/atchafalaya.asp. The Corps of Engineers also contracted for the production of the entire Lower Mississippi River as ENCs. The paper suggested that CHRIS should consider whether it would be possible to use the existing ENC Product Specification but allow the navigation system to use different nomenclature for S-57 features, e.g. one that is more familiar to inland users.

The second paper reported on a EU project on the Rhine River aiming at developing an Inland ECDIS Standard and involving the German company SevenCs as well as the BSH. Development was based on Standards established for ECDIS by the IMO, the IHO (S-57 and S-52) and IEC, with a view to ensuring compatibility between “Maritime” and Inland ECDIS. In order to represent data necessary for inland waterway traffic in a S-57 conforming application, the S-57 object catalogue was extended by the required object classes, attributes and values, through the OEF. Similarly, to display the new symbols, the lookup tables, as in the IHO Presentation Library, were extended. Inland ENCs were produced in Germany and the Netherlands for the whole Rhine, and in Germany and Austria for parts of the Danube. The EU Central Commission for the Navigation on the Rhine (CCNR) formally adopted the contents of the Inland ECDIS Standard in May 2001.

Discussion then followed. Australia (RW) reported on a workshop held in Norfolk, Va, USA (May 2001) on Inland Waterways, where he obtained better understanding of the situation. Both the North American and the European initiatives intended using S-57 as base. As there were not governed by IMO and IHO Regulations, development was faster than for ENC and ECDIS. They put pressure on CHRIS to accept their standard.

Germany (HH) confirmed that development of the EU ECDIS Inland Standard was faster with fewer countries involved. Inland ECDIS was progressing without IHO permission; it was too late to get involved. Germany would accept responsibility to ensure that no serious conflict between ECDIS and Inland ECDIS

would occur in Europe, as Germany was one of the main developers of Inland ECDIS in Europe. As vessels moved from the maritime world to Inland waters, there must be compatibility. UK (CD – Chairman of TSMAD) stated that the reasons why the proposals for additional objects, etc. were not accepted by TSMAD was that S-57 being an International Standard, new additions must have international acceptance.

Australia suggested that a CL be issued, indicating that Inland ECDIS developments were taking place and requesting which States were involved. UK (CD) concurred and suggested that contact be made to establish what or if agreements between European and North American developments were made. Norway agreed that it was IHO business and not a TSMAD issue. IHB (MH) noted that, whilst we were aware of the developments taking place on this topic in the USA and in Europe, both based on S-57, such standard development may be in progress elsewhere that we did not know. In any case, there was a need for harmonization between these initiatives. He further felt that C&SMWG should include Inland ECDIS symbols in the Presentation Library for transition between river and sea.

Germany (HH) noted that they had forwarded a proposal for S-57 extensions for inland waterway ECDIS to TSMAD two years ago. TSMAD felt that this was not an international issue. He supported Australian proposal now, noting that HO's were in best situation/position to obtain information and report back.

The Chairman referred to the planned CL on ECS (see Section 6. above) and he suggested that the Inland ECDIS issue could be addressed in same CL. This was agreed.

Action:

- **IHB** to inform Member States, by CL, on Inland ECDIS Developments.

17. RASTER DATA DEVELOPMENT

Doc: CHRIS/13/17A rev.1 - Report on RNC Development

The Chairman introduced the above document containing reports on RNC development that had been received from Australia (384 RNCs, the entire Australian chart portfolio, available in HCRF format), UK (ARCS Service: 3.000 RNCs, providing near worldwide cover, available in HCRF format) and USA-NOAA (In partnership with Maptech Inc: 1016 RNCs, the entire suite NOAA charts, available in BSB format).

There were no particular comments. Australia (RW) proposed that, as no further RNC development was expected, the item should be removed from the Agenda. This was agreed.

Action:

- **IHB** to remove the item "Raster Data Development" from the agendas of future CHRIS Meetings.

18. MARINE INFORMATION OBJETS (MIO)

*Docs: CHRIS/13/18A- Draft Terms of References for HGMIO
CHRIS/13/18B - Report on MIOs*

The Chairman stated that the principle of establishing a joint IHO-IEC Harmonizing Group on Marine Information Objects (HGMIO) had been approved by CHRIS, at its 12th Meeting in October 2000, and by the IEC Technical Committee 80 in April 2001. The draft Terms of Reference for HGMIO, as in CHRIS/13/18A, were agreeable to TC80. CHRIS was therefore asked to consider and endorse these ToR. If

they were approved, the setting up of HGMIO would become effective, with Dr Lee ALEXANDER (Univ. of New Hampshire, USA) as Chairman.

To a query from France (JLB) asking whether HGMIO would be open to Maritime Industry representatives, IEC (MR) answered that it would through IEC and CIRM.

The proposed Terms of Reference were approved by the Meeting.

It was agreed that IHB would ask for nomination to HGMIO by CL. The Chairman further requested that CHRIS Members ensure that appropriate nominations to HGMIO be made in their respective HOs. The inaugural meeting of HGMIO was planned for January-February 2002 at the University of New Hampshire (Center for Coastal and Ocean Mapping), Durham, NH (USA).

In the absence of Dr Alexander, IHB (MH) then introduced the above 2nd paper reporting on MIOs-related activities. An ECDIS Ice Objects Catalogue, based on S-57, was completed by the Canadian Ice Centre. Ice information will form a category of MIOs. Interim Guidelines for the Presentation and Display of AIS Target Information, on ECDIS or INS (Integrated Navigation Systems), were agreed at IMO NAV 47 in July 2001 and issued as IMO SN/Circ.217. Coordination will occur between HGMIO and the IALA VTS Committee and AIS Working Group, regarding the display of VTS-related information on ECDIS. Close cooperation is expected with the new IEC TC80/W13 being established to address the basic elements common to all navigation equipment displays.

Action:

- **IHB** to ask for nomination to HGMIO by CL.

19. STATUS OF IHO PUBLICATIONS ON ECDIS (CHRIS/13/19A)

Doc: CHRIS/13/19A- IHO Publications on ECDIS

IHB (MH) introduced the above paper, mentioning that the main point was the publication in November 2000 of a new edition 3.1 of S-57. Ed. 3.1 would be frozen until at least November 2002. The following two new documents were included in Ed. 3.1: 1) List of IHO Recommended Tests for ENC Validation; and 2) INT1/S-57 Cross-reference Document. Ed. 3.1 is distributed on CD-ROM. A booklet accompanies the CD-ROM and provides general information on the Standard.

There were no comments.

20. ANY OTHER BUSINESS

20.1 Electronic Commerce for Nautical Charts

Doc: CHRIS/13/20A - Electronic Commerce for Nautical Charts

In the absence of any USA delegate, the Chairman introduced the above paper describing NOAA's electronic commerce system. The site (www.NauticalCharts.gov) was being used to distribute lithographic charts, and to manage the assembly of Print on Demand charts in real-time and distribute those charts. The system had been successfully operating for 1 year and one third of NOAA's chart agents were now using the site.

It was noted that products from any supplier could be distributed through this system, including those of other hydrographic offices. This could allow any hydrographic office to sell the charts of any other hydrographic office to authorized chart agents, thus improving the availability of charts and other navigation products.

There were no comments.

20.2 Print On Demand

Doc: CHRIS/13/20B - Print on Demand

In the absence of any USA delegate, the Chairman introduced the above paper on NOAA's efforts to use Print on Demand technology for nautical charts. Primary purpose in using PoD was to distribute charts that are up-to-date at the time they are manufactured. Collateral advantages are the possibility to customize charts with information specific to market segments, e.g. recreational users, and the reduction of inventory and warehousing. Approximately 266 of NOAA's 1,016 charts were now available via PoD and the entire chart suite would be available by the end of 2001. Whilst the PoD charts had been well received by mariners, acceptance by charts agents had been mixed as it complicated their business. The technology to produce PoD charts has been found to be within the reach of any HO. Similarly to e-commerce (Section 20.1), the flexibility of PoD could allow any HO to print up-to-date charts of any other HO for local customers anywhere in the world. A discussion group was formed at the OEF, www.openecdis.org, to exchange information about PoD.

There were no comments.

20.3 Chart Carriage Regulation Changes to Recognize ECDIS

Doc: CHRIS/13/20C - Chart Carriage Regulation Changes to Recognize ECDIS

In the absence of any USA delegate, the Chairman introduced the above paper reporting that the U.S. Coast Guard had begun the process of amending the chart carriage regulations to recognize ECDIS in United States waters.

Australia (RW) felt that this paper referred more to ECS than ECDIS/ENC requirements. The Chairman noted that this paper illustrated that actions had to be taken in this field before July 2002. It was agreed that the IHB would draw MS' attention by CL to the fact that administrative steps may have to be taken by National Maritime Authorities to ensure that ECDIS is accepted as meeting the carriage requirement from that date, when the revised IMO SOLAS V Convention will come into force.

Action:

- **IHB** to draw MS' attention, by CL, on the implications of the revised SOLAS V Convention coming into force in July 2002.

20.4 Guidelines for Port State Control Officers (PSCOs) on Electronic Charts

Doc: CHRIS/13/20D - Guidelines for Port State Control Officers (PSCOs) on Electronic Charts

Germany (HH) introduced the above paper containing Guidelines for Port State Control Officers (PSCOs) on Electronic Charts, in Germany. They were intended for assisting PSCOs during inspections on board to assess whether a ship is using electronic charts in accordance with SOLAS V requirements.

European HOs were encouraged to establish contacts with their own Port State Control Authorities in order to ensure uniform practice within the signatory states, and the other HOs were encouraged to set up similar guidelines for their Port State Control organisation, if any.

21. DATE AND LOCATION OF NEXT MEETING

Following an invitation from China Maritime Safety Administration (MSA), it was agreed that the next meeting would take place in Shanghai in the second half of August 2002.

There being no further items to discuss, the Meeting closed at 16:00 on 19 September 2001. On behalf of all participants, the Chairman thanked RAdm MARATOS for his hospitality and the excellent support received from the HNHS staff throughout the Meeting.

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LIST OF ACRONYMS

AIS	Automated Identification System
ARCS	Admiralty Raster Chart Service (UK)
BSB	Raster chart format (USA-Maptech)
BSH	Bundesamt für Seeschifffahrt und Hydrographie (Germany)
CCNR	Central Commission for the Navigation on the Rhine (European Union)
CHO	Co-operating Hydrographic Office (PRIMAR)
CHRIS	Committee on Hydrographic Requirements for Information Systems (IHO)
CIRM	Comité International Radio Maritime
CSC	Chart Standardisation Committee (IHO)
C&SMWG	Colour and Symbol Maintenance Working Group (IHO)
CD-ROM	Compact Disk - Read Only Memory
DGIWG	Digital Geographic Information Working Group (NATO)
DIGEST	Digital Geographic Information Exchange Standard (DGIWG)
DNC	Digital Nautical Chart (USA-NIMA)
ECDIS	Electronic Chart Display and Information System
ECS	Electronic Chart System
ENC	Electronic Navigational Chart
ESSA	Environmentally Sensitive Sea Area
GIS	Geographic Information System
HCRF	Hydrographic Chart Raster Format (UK)
HGMIO	Harmonizing Group on Marine Information Objects (IHO-IEC)
HNHS	Hellenic Navy Hydrographic Service (Greece)
HO	Hydrographic Office

IALA	International Association of Lighthouse Authorities
ICA	International Cartographic Association
ICC	International Cartographic Conference
IEC	International Electrotechnical Commission
IHB	International Hydrographic Bureau
IHO	International Hydrographic Organization
IMO	International Maritime Organization
INT	International (Charts) (IHO)
ISO	International Organization for Standardization
MBSHC	Mediterranean and Black Seas Hydrographic Commission (IHO)
MIO	Marine Information Object
MoU	Memorandum of Understanding
MSA	Maritime Safety Agency (China)
MSC	Maritime safety Committee (IMO)
NAV	Sub-committee on Navigation (IMO)
NATO	North Atlantic Treaty Organization
NECSA	Navigational Electronic Chart System Association
NHS	Norwegian Hydrographic Service
NIMA	National Imagery and Mapping Agency (USA)
NMGD	Norwegian Maritime Geodata Demonstrator
NOAA	National Oceanic and Atmospheric Administration (USA)
NP	Nautical Publication
OGC	Open GIS Consortium
OEF	Open ECDIS Forum
PL	Presentation Library (IHO)
PoD	Print-on-Demand

PSCO	Port State Control Officer
PRIMAR	European ENC Coordinating Centre
PS	Performance Standards for ECDIS (IMO)
RENC	Regional Electronic Navigational Chart Coordinating Centre (IHO)
RNC	Raster Navigational Chart
RTCM	Radio Technical Committee on Maritime Services (USA)
SDI	Spatial Data Infrastructure
SENC	System Electronic Navigational Chart
SHARED	Singapore Hong Kong Admiralty Raster and ENC Demonstration
SHOA	Servicio Hidrográfico y Oceanográfico de la Armada (Chile)
SHOM	Service Hydrographique et Océanographique de la Marine (France)
SNPWG	Standardization of Nautical Publications Working Group (IHO)
SOLAS	Safety of Life at Sea Convention (IMO)
TAWG	Technology Assessment Working Group (IHO)
TC211	Technical Committee 211 (ISO)
ToR	Terms of Reference
TSMAD	Transfer Standard Maintenance and Application Development Working Group (IHO)
UKHO	United Kingdom Hydrographic Office
USCG	United States Coast Guard
VPN	Virtual PRIMAR Network
VRENC	Virtual Regional ENC Co-ordinating Centre
VTS	Vessel Traffic System
WEND	Worldwide Electronic Navigational Chart Data Base (IHO)
WG	Working Group

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CHRIS/13/1C rev.3	Membership of CHRIS and related WGs
CHRIS/13/1D rev.2	CHRIS Membership
CHRIS/13/2A rev.7	Agenda
CHRIS/13/3A rev.2	List of actions from CHRIS/12
CHRIS/13/3B	Terms of Reference for CHRIS Committee and Related Working Groups
CHRIS/13/4A	Report on WEND/6
CHRIS/13/4B	Proposition for "Additional Rules for the WEND Principles" (<i>J-L Bouet-Leboeuf</i>)
CHRIS/13/5A	Report on MSC73 and NAV 47 (<i>Neil Guy</i>)
CHRIS/13/6A rev.1	Draft ECS Data Standard – ISO 19379 (<i>Mort Rogoff</i>)
CHRIS/13/6B	ECS Equipment Standard (<i>Fred Ganjon</i>)
CHRIS/13/6C	NECSA Letter of 13 September 2001 to Radm Neil Guy (<i>Mort Rogoff</i>)
CHRIS/13/7A	CL15/2001 extract on SENC Delivery (<i>IHB</i>)
CHRIS/13/7B	Summary of responses received to CL 15/2001 (<i>IHB</i>)
CHRIS/13/7C	The SENC Delivery Option (<i>Neil Guy</i>)
CHRIS/13/8A	CL 15/2001 extract on ENC Security Scheme (<i>IHB</i>)
CHRIS/13/8B	CIRM Letter of 24 May 2001 to IHB (<i>IHB</i>)
CHRIS/13/8C rev.1	Standardisation of Data Protection for ENC's (<i>Robert Ward</i>)
CHRIS/13/8D	ENC Security Schemes (<i>Neil Guy</i>)
CHRIS/13/8E	PRIMAR ENC Security Scheme (<i>Robert Sandvik</i>)
CHRIS/13/8F	The Canadian Experience Implementing the PRIMAR Security System (<i>Greg Levonian & Michael J. Casey</i>)
CHRIS/13/9.1A	RNC Test Data Set (<i>BSB Format - Dave Enabnit</i>)
CHRIS/13/9.2A	Report on IEC/TC80/WG 7 (<i>Dan Mades</i>)
CHRIS/13/10A	Implementation of SHARED concept in the Caribbean (<i>Dave Enabnit</i>)
CHRIS/13/11A	Report on NATO Conference (<i>Neil Guy</i>)
CHRIS/13/11B	Report on the UK Hydrographic Society Conference (<i>IHB</i>)
CHRIS/13/11C	Report on the US Hydrographic Society Conference (<i>Dave Enabnit</i>)
CHRIS/13/12A	Report on OEF Activities (<i>Gert Büttgenbach & Lee Alexander</i>)
CHRIS/13/12B	Greater use of the Internet and OEF for CHRIS WG'S (<i>AU, CA and UK</i>)
CHRIS/13/13.1A	Report on the June 2001 Marine Industry Workshop (<i>Neil Guy</i>)
CHRIS/13/14.1A	Report on TSMAD Activities (<i>Chris Drinkwater</i>)

CHRIS/13/14.2A	Report on C&SMWG Activities (<i>Brent Beale</i>)
CHRIS/13/14.2B	Report of 12 th Meeting of C&SMWG (<i>Robert Ward</i>)
CHRIS/13/14.2C	Urgent Funding Requirement for C&SMWG (<i>Robert Ward</i>)
CHRIS/13/14.3A rev.1	Report on TAWG Activities (<i>Mike Casey</i>)
CHRIS/13/14.4A WP2	Report on SNPWG Activities (<i>Robert Ward</i>)
CHRIS/13/15.1A	Re-Structuring of IHO Committees and Working Groups: the Role of CSC and its Relationship with CHRIS (<i>Peter Cox</i>)
CHRIS/13/15.1B	Report on CSC Activities, in Relation to CHRIS (<i>Peter Cox</i>)
CHRIS/13/15.2A	Report on TC211 activities in relation to CHRIS (<i>Tony Pharaoh</i>)
CHRIS/13/15.3A	Report on activities of ICA Standards Commission (<i>Michel Huet</i>)
CHRIS/13/15.4A	Relations with International Organizations (<i>Neil GUY</i>)
CHRIS/13/16.1A	PRIMAR Report to CHRIS (<i>Robert Sandwik</i>)
CHRIS/13/16.2A	MoU for Co-operation within the Mediterranean and Black Sea Virtual RENC (<i>Rosario La Pira</i>)
CHRIS/13/16.2B	Status Report on Virtual RENC Development in the MBSHC Area (<i>Rosario La Pira</i>)
CHRIS/13/16.3A	IHB CL 31/2001 on ENC Coverage
CHRIS/13/16.3B rev.6	Report on ENC Development (<i>AU, CA, DK, FR, GR, IT, KR, SE, US</i>)
CHRIS/13/16.3C	ENC Production Experience at the Chilean HO
CHRIS/13/16.5A	Report on DNC Development at US-NIMA (<i>Chris Andreasen</i>)
CHRIS/13/16.6A	ENC Development in Inland Waters (<i>Dave Enabnit</i>)
CHRIS/13/16.6B	The Inland ECDIS Standard of the CCNR (<i>Claudia Oberheim</i>)
CHRIS/13/17A rev.1	Report on RNC Development (<i>AU, UK, USA</i>)
CHRIS/13/18A	Terms of References for HGMIO (<i>Lee Alexander</i>)
CHRIS/13/18B	Report on MIOs (<i>Lee Alexander</i>)
CHRIS/13/19A	Status of IHO Publications on ECDIS (<i>Michel Huet</i>)
CHRIS/13/20A	Electronic Commerce for Nautical Charts (<i>Dave Enabnit</i>)
CHRIS/13/20B	Print on Demand (<i>Dave Enabnit</i>)
CHRIS/13/20C	Chart Carriage Regulation Changes to Recognize ECDIS (<i>Dave Enabnit</i>)
CHRIS/13/20D	Guidelines for Port State Control Officers (PSCOs) on Electronic Charts (<i>Horst Hecht</i>)

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1 International Electrotechnical Commission

2 Comité International radio Maritime

3 Chart Standardization Committee

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SENC DELIVERY OPTION: PROPOSED CHANGES TO S-52

[Changes, as agreed at the 13th CHRIS Meeting, are shown by means of strucked-through (deletions) or shaded (additions) characters]

3.3 System ENC (SENC)

- (a) The Transfer Standard is designed for the distribution of digital chart data. It is recognized that it is not the most efficient means of storing, manipulating or preparing data for display. Each manufacturer of ECDIS systems may design his own storage formats or data structure to allow its system to meet the performance requirements stated in this specification. The resulting database is called the System ENC (SENC).
- (b) It is mandatory that official HO data (ENC) be available and any ECDIS ~~should~~ must be capable of accepting and converting official HO data (ENC) to the internal storage structure of the individual ECDIS (System ENC or SENC). Such data includes both that in the ENC and that delivered in digital format to update the ENC. (↔) ~~————This conversion process should be accomplished in the ECDIS but~~ does not imply real-time processing of HO supplied data. ~~It allows for the one-time conversion of the HO data upon receipt.~~
- (c) ~~The~~ **An** official copy of the HO ~~supplied ENC~~ data, distributed as an ENC or contained within an externally generated SENC, is to be kept onboard. ~~From this, the ECDIS generates the "System ENC", which~~ The SENC generated on board, by ENC to SENC conversion, or ashore is used for actually operating the ECDIS. Through the same conversion process, official updates are added to the System ENC.

The information content of the SENC should include all that of the ENC corrected by official updates (see Appendix 1).

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PROPOSED TECHNICAL RESOLUTION

(as approved by the 13th CHRIS Meeting, Athens, Greece, September 2001)

IHO PUBLICATION M-3**CHAPTER A – SUBJECTS OF GENERAL APPLICATION****SECTION 3 – EXCHANGE, DISTRIBUTION, REPRODUCTION****Technical Resolution A3.11 – ENC/SENC Distribution Option**

It is resolved that SENC distribution can be accepted as an option, in addition to direct ENC distribution, providing that the following principles be adhered to:

1. The HO should ensure that the IHO data (ENC) is always available to any user in the S-57 ENC format.
 2. As an option Hydrographic Offices may allow the distribution of their HO data (ENC) in a SENC format.
 3. Distributors who are to supply the SENC service must operate under the regulations of the issuing authority. The onshore ENC to SENC conversion must be performed using type approved software.
 4. The SENC update mechanism should not be inferior to the ENC - ECDIS update mechanism.
 5. The distributor of SENC data should maintain a registry of its users.
 6. The copyright of the ENC data should be maintained.
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IHO DATA PROTECTION SCHEME ADVISORY GROUP**Work Directive**

(as approved by the 13th CHRIS Meeting, Athens, Greece, September 2001)

1. As a result of discussions at CHRIS/13 and proposals in paper CHRIS13/8.C rev1, CHRIS/13:
 - a. reconfirmed that:
 - (1) ENC data protection is optional for M/S, and
 - (2) a single IHO ENC data protection method is preferred.
 - b. supported the concept of an IHO ENC data protection kernel based on the PRIMAR Security Scheme.

 2. In order to implement an IHO ENC data protection kernel, CHRIS/13 agreed that a small, expert advisory group should be invited to:
 - a. develop a plan that will:
 - (1) enable the immediate and speedy development of an IHO ENC data protection kernel and supporting documentation modelled on the PRIMAR Security Scheme, and
 - (2) enable the IHO to assume responsibility for any necessary supporting documentation.
 - b. investigate the implications to the IHB of:
 - (1) subsequently assuming responsibility for the kernel, and
 - (2) becoming the Security Scheme Administrator.
 - c. identify any constraining implications or effects on IMO or any other related regulations.

 3. The Advisory Group will be led by PRIMAR, assisted by Canada and any other M/S or other parties who can contribute relevant expertise and experience to the tasks.

 4. The Advisory Group are asked to report back to the CHRIS (via the IHB) by end of 2001 with a recommended course of action, including:
 - a. advice on the matters at 2.b and 2.c,
 - b. the identification of any cost impacts and proposed sources of funding,
 - c. an estimate of the timescale required to achieve the aim.

 5. The IHB will circulate the recommendations of the Advisory Group and seek endorsement and further action as appropriate.
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DRAFTING GROUP ON PROCEDURES FOR CHANGES**PROPOSAL FOR PRINCIPLES AND A SET OF PROCEDURES
FOR MAKING CHANGES TO IHO STANDARDS**

(as approved by the 13th CHRIS Meeting, Athens, Greece, September 2001)

Principles

Improvements to standards and systems only come about by change, however, changes can cause incompatibility between systems, high updating costs and dissatisfied users. These principles have been drafted to try and avoid this.

- A. Any proposed changes to existing standards need to be technically and commercially assessed before approval.
- B. Assessment should involve all parties including IHO, manufacturers, distributors and users.
- C. Changes to standards should not affect the existing user base where possible and therefore should be "backwards compatible", or the existing version must be supported for a specified time.
- D. If changes are required on the basis of safety of navigation rather than product enhancement, then the previously approved system must be allowed to continue being used at sea for a defined period, to allow due time for the changes to implemented on board.
- E. On a case by case basis the lead in time for the change should be defined, unless already defined by a change at IMO.
- F. In exceptional cases, it may be necessary to apply changes retrospectively to all equipment at sea as soon as possible.
- G. All interested parties should be encouraged to "continuously improve" IHO standards. All rejected proposals should therefore have a proper explanation.

Procedures

These procedures are recommended to ensure that any proposed changes are properly assessed and implemented. The procedures should be simple to encourage their use.

- 1. All parties may submit a "change proposal" to IHB for logging and processing.
- 2. The "change proposal" must contain a justification for the change, a recommended action list and a proposed time frame for implementation.
- 3. The IHB forwards the "change proposal" to the relevant IHO committee for evaluation and decision on the next stage.
- 4. The relevant committee will then either reject or accept the proposal. If rejected it should be returned to the originator with the reasons.
- 5. If accepted, the committee will involve all the relevant bodies in assessing the proposal and planning any subsequent work.

6. The bodies should include representation from manufacturers, distributors and users via their relevant points of contact such as CIRM, IALA and ICS.
7. Based on this evaluation it should be decided by the committee if the proposal should be recommended for approval or held to a later date (if the change is minor and could be introduced with other changes) or rejected.
8. If approved and after any subsequent work is complete, a "change note" should be drafted showing a summary of the finally agreed changes, documents affected, a recommended action list and the timetable for implementation.

Note: The recommended action list defines the appropriate action for the change and should be developed as a standard list from which the action is chosen. These could be:

- a) retrospectively to all ECDIS at sea;
- b) to all ECDIS at sea at the next service;
- c) to all ECDIS delivered from this date;
- d) to all ECDIS delivered from a date in the future;
- e) to all ENC/SENC delivered after a date in the future..... and so on.

Further work: This process should be flow-charted and standard forms drafted for the "change proposal" and "change note" showing the decisions at each stage.

**REVISED TERMS OF REFERENCE FOR THE
STANDARDIZATION OF NAUTICAL PUBLICATIONS WORKING GROUP (SNPWG)**

(as approved by the 13th CHRIS Meeting, Athens, Greece, September 2001)

1. Objective

To develop guidelines for the preparation of nautical publications, primarily in a digital format compatible with ECDIS and secondly in paper and digital formats, as stand-alone publications.

2. Definition

A Nautical Publication is a special-purpose book, or a specially compiled database, that is issued officially by or on the authority of a Government, authorized Hydrographic Office or other relevant government institution and is designed to meet the requirements of marine navigation. Nautical publications include but are not limited to:

*Distance Tables,
List of Buoys and Beacons,
List of Lights
List of Radio Signals
List of Symbols, Abbreviations and Terms used on Charts
Mariners' Handbooks
Notices to Mariners
Routeing Guides
Sailing Directions
Tidal Stream Atlases
Tide Tables*

Nautical publications can be made available in a paper or a digital format.

3. Authority

This Working Group (WG) is a subsidiary of the Committee on Hydrographic Requirements for Information Systems (CHRIS) and its membership and decisions are subject to CHRIS approval.

4. Execution

- a) The WG should:
 - (i) Investigate the data format specifications, content and display requirements of digital nautical publications intended for use in ECDIS.
 - (ii) Draft guidance document(s) and/or revised technical resolutions, as appropriate.
 - (iii) Liaise with relevant IHO Technical WG's to ensure, technical feasibility and compatibility of any developed proposals.
- b) The WG should liaise with other CHRIS WG's and other IHO and international bodies as appropriate and as instructed by CHRIS.

5. Chairmanship and Procedures

- a) The WG shall comprise representatives of IHO Member States (M/S) and Expert Contributors.
 - b) The WG should work primarily by correspondence. The WG should attempt to meet at least once every two years, normally in connection with another convenient IHO forum.
 - c) Decisions should generally be made by consensus. If votes are required on issues or to endorse proposals presented to the WG, only M/S may cast a vote. Votes shall be on the basis of one vote per M/S represented.
 - d) Expert Contributor membership is open to entities and organisations that can provide a relevant and constructive contribution to the work of the WG.
 - e) The WG shall be chaired by a representative of a M/S. The Chairman and the Vice-Chairman shall be chosen by the M/S represented in the WG, for a period of three years.
 - f) Expert Contributors shall seek approval of membership from the Chairman.
 - g) Expert Contributor membership may be withdrawn in the event that a majority of the M/S represented in the WG agree that an Expert Contributor's continued participation is irrelevant or unconstructive to the work of the WG.
 - h) All members shall inform the Chairman in advance of their intention to attend meetings of the WG.
 - i) In the event that a large number of Expert Contributor members seek to attend a meeting, the Chairman may restrict attendance by inviting Expert Contributors to act through one or more collective representatives.
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ACTION LIST FROM CHRIS/13

ITEM	THEME	ACTION(S)
4.	WEND Principles	<ul style="list-style-type: none"> • CHRIS/13 participants to send their comments to the IHB by end September 2001. • IHB to provide France with all comments received. • France to revise their proposal and send it to the IHB. • IHB to send the revised French proposal to WEND Members.
6.	ECS	<ul style="list-style-type: none"> • IHB to inform by CL Member States on ECS Developments.
7.	SENC Delivery	<ul style="list-style-type: none"> • IHB to issue a CL to ask MS to vote on the proposed changes to S-52 and new TR A 3.11.
8.	ENC Security Scheme	<ul style="list-style-type: none"> • PRIMAR, as Leader of the Advisory Group, to report back to the IHB by end of 2001 with a recommended course of action. • IHB to circulate the recommendations and seek endorsement and further action as appropriate.
9.	IHO Test Data Sets for IEC 61174	<ul style="list-style-type: none"> • UK to complete the IHO Test Data Sets for ENC and RNC (HCRF format). • USA-NOAA to complete the IHO Test Data Set for RNC (BSB format). • IHB to advertise the IHO Test Data Sets on the IHO Website, when they are ready, and to produce S-52 Appendix 4.
12.	OEF	<ul style="list-style-type: none"> • CHRIS WGs' Chairmen to make use of the OEF as far as possible, by establishing relevant discussion groups to progress their work and nominating appropriate leaders. • IHB to contact the CSC Chairman, with a view to possibly establishing a CSC discussion forum on the OEF.
13.	Marine Industry Workshops	<ul style="list-style-type: none"> • IHB to finalize and distribute the Proceedings of the 2001 Marine Industry Workshop. • IHB to advise of the dates for the 2002 Workshop.
14.1	TSMAD	<ul style="list-style-type: none"> • CHRIS WG's Chairmen to refer to the agreed Principles and Procedures, as in Annex H, when updating IHO Standards. • IHB to circulate the Proposal to other IHO Committees and WG's.
14.2	C&SMWG	<ul style="list-style-type: none"> • IHB to encourage MS to directly support C&SMWG, particularly by providing office bearers. • IHB to investigate all the options open to the IHO to fund the work of the C&SMWG.
14.4	SNPWG	<ul style="list-style-type: none"> • IHB to seek MS approval of the proposed amendments to TRs. • IHB to invite MS to consider participation in the SNPWG and nominate appropriate representatives who are able to contribute to NP3 issues. • IHB to request existing SNPWG members to confirm their continuing participation in the WG.
15.1	CSC	<ul style="list-style-type: none"> • CSC to make a proposal to the 16th IHC, for CSC to become a WG of CHRIS. • CSC to prepare ToR for the new WG, for consideration by both CSC and CHRIS. • IHB to prepare revised ToR for CHRIS, for consideration by CHRIS, then MS.

16.6	Inland ECDIS	• <i>IHB to inform Member States, by CL, on Inland ECDIS Developments.</i>
17	RNC	• <i>IHB to remove the item “Raster Data Development” from the agendas of future CHRIS Meetings.</i>
18	MIO	• <i>IHB to ask for nomination to HGMIO by CL.</i>
20.3	SOLAS V	• <i>IHB to draw MS’ attention, by CL, on the implications of the revised SOLAS V Convention coming into force in July 2002.</i>
