

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

**REPORT OF THE IHO CHART STANDARDIZATION AND PAPER CHART WORKING
GROUP (CSPCWG)
by the Chairman, Dr. Peter COX, UK**

1. **Chairman:** Dr. Peter G. COX (UK) (from June 1997)
Vice Chairman: Ing. en chef Jean-Louis BOUET-LEBOEUF (France) (from October 1998)
2. **Membership:** Australia, Brazil, Canada, Chile, Croatia (from March 1998), Cuba (from March 2000), Denmark (from April 2001), Egypt, Finland (from March 1998), France, Germany, Greece, India, Indonesia, Italy, Japan, Netherlands, New Zealand, Norway (to April 2001), Russian Federation, Republic of South Africa, UK, USA (NIMA & NOS).

Membership includes at least one representative from each International charting region. The IHB Director in charge of cartography (Rear Admiral Neil Guy) is an ex-officio member.

3. **Meetings** 24 March 2000 at IHB, Monaco [the first for twenty-one years, and only its second ever!] - see Objective 3.1.3 below.
CSC representation at other meetings is detailed under Objective 3.1.3 below.

4. Agenda Items

As the CSC has always worked by correspondence, tasks are not currently referred to in terms of agenda items.

5. Conclusions

As noted above under 4. Agenda Items, the CSC's tasks are not currently referred to in terms of agenda items and conclusions. Completed specifications are however noted below under the appropriate Objective or Task.

Objective 3.1.1.1

Continuation of the co-operative work on development of ECDIS services, particularly: On-going refinement and expansion of specifications and standards through the CHRIS and its working groups, with links to the CSC and ISO.

See Objective 3.1.3 for CSC report on liaison between CSC and the digital groups. The CSC's review and revision of M-4 Part B is incorporating references to digital charts and their specifications (see Task 3.1.1).

Objective 3.1.3

Continuation of the development of the international [paper] chart series through the relevant committees and bodies

Introduction

The CSC has made significant progress since XVth IHC on a number of the long standing, major tasks which are allocated to the CSC, in addition to responding to newly identified requirements. A number of additional tasks requiring the attention of the CSC Secretariat, have had an inevitable impact on the planned work schedule. Such tasks have included provision of advice and assistance to the IHB [including input to Circular Letters, digital M-4 and the new IHO symbol booklet listing], advice on specific queries to Member States and the monitoring of relevant work at IMO [involving a particularly high number of relevant papers].

The CSC Chairman would like to take this opportunity to thank all CSC members for their valuable contributions to the work of the CSC.

CSC Terms of Reference (TORs)

The CSC's responsibilities are detailed in its current Terms of Reference, which were revised in accordance with XVth IHC Decision No. 1 (PRO 2) [amending Technical Resolution T 1.1 - Committees and Working Groups]. The CSC's revised terms of reference were completed in November 1997 and announced by IHO Circular Letter 14/1998. Following agreement to the TORs, election procedures were devised and the Vice-Chairman was elected as announced in CSC Circular Letter 10/1998.

CSC Meeting

The nature of the CSC's work means that it is normally carried out by correspondence [e-mail or fax]. However, the Extraordinary International Hydrographic Conference in 2000 presented the CSC with the opportunity to hold a meeting. The meeting was extremely useful, providing a valuable chance for members to exchange views on a wide range of topics. Discussion at the meeting included such diverse topics as: review and revision of M-4; the inclusion of S-48 in M-11; future work programme; state of the validation of the INT chart schemes; international liability issues and their possible inclusion in M-4; the possible adoption of M-4 as an ISO standard; cartographic training, including the development of a standard for nautical cartographers; IHO Strategic Plan; liaison with CHRIS; future CSC meetings.

The CSC's review, revision, development, and maintenance of M-4 [Chart Specifications of the IHO and Regulations of the IHO for International (INT) Charts] and the Guidance for Co-ordinators of Regional International (INT) Charting Schemes [formerly S-48] for inclusion in M-11

The CSC's principal tasks of review, revision, development, and maintenance of M-4 and the Guidance for Co-ordinators of Regional International (INT) Charting Schemes [formerly S-48] for inclusion in M-11, are detailed below under Task 3.1.1.

Development of new symbology for ship routing, including archipelagic sea lanes, vessel traffic services, environmentally sensitive areas, etc is detailed below under Objective 3.1.3.1.

Resolution of specific issues concerning the extension of the INT chart scheme to include large scale charts is noted under Objective 3.1.3.3.

Liaison with CHRIS etc

Since the XVth IHC, the CSC Secretariat has worked on developing contacts to establish and maintain close liaison with other relevant IHO committees and working groups, in particular with the CHRIS and its Working Groups. The CSC's Vice-Chairman has been appointed the CSC's representative on CHRIS, with representation on its working groups as appropriate. CSC briefs have been provided to meetings of the Colours and Symbols Maintenance Working Group and the CHRIS. The Vice-Chairman attended the CHRIS meetings in 2000 and 2001.

To assist the IHO in achieving its objectives, it is important that the work of the IHO's Committees and Working Groups, such as CHRIS and CSC, is more closely integrated. On-going changes in marine cartography mean that it is no longer appropriate for the CSC and CHRIS to continue in parallel; the closer liaison now introduced, although improving the situation, is not delivering all the co-ordination required. The CSC's contribution to future charting, including its involvement in moves to closer integration between paper (analogue) and electronic (digital) charts, needs to be developed.

Discussions over the last two years, within both the CSC and CHRIS, of re-organization of the IHO's Committees and Working Groups, have led the CSC Chairman to prepare a paper on the role of CSC and its relationship with CHRIS. It proposes that it is now appropriate that the scope of CHRIS be extended to incorporate the work of the CSC and that the status of CSC be changed to a Chart Standardization and Paper Chart Working Group under CHRIS with effect from the XVIth IHC. The existing title of CHRIS (Committee on Hydrographic Requirements for Information Systems) would cover the extended remit. The CSC believes that decisions on such a fundamental change as restructuring of the IHO's Committees and Working Groups should be referred to the IHC; the forthcoming XVIth IHC presents the opportunity for such discussion. The CSC Chairman's paper, endorsed by 13th CHRIS, is intended to initiate and inform that discussion. It is submitted as a formal proposal at section 6.b of this report.

Liaison with IHB, IHO Regional Hydrographic Commissions and other bodies

CSC input [attendance by Chairman or submission of written briefs, either direct or to the IHB] has been provided by the CSC Secretariat to numerous IHO meetings, including most of the Regional Hydrographic Commissions, together with the Caribbean and Gulf of Mexico Hydrographic Commission's Electronic Chart Working Group. In addition, the Chairman presented a paper at the first meeting of the ROPME Sea Area Hydrographic Commission.

Similarly, briefs have been provided to IHB representatives at IMO meetings, including in particular NAV 45, MSC 69 (at which the CSC Secretary represented the IHO) and NAV 47. Other assistance to, and liaison with, IHB has been detailed elsewhere in the CSC report

Detailed comments have been provided on a number of International Charting Schemes.

XIVth IHC Decision No 44 [International Notices to Mariners] (PRO 19)

Decision No 44 of the XIVth Conference tasked the CSC to undertake a study into the feasibility of establishing a System of International Notices to Mariners. As reported to XVth IHC, initial investigations, including a consultative study, were carried out. Since the XVth IHC, the CSC Vice-Chairman has been progressing the study. Investigations have included consideration of: standardization of Notices to Mariners, definition of criteria for NMs, and time-scales for publication, etc along the lines of S-53 for navigational warnings. At present the study is concentrating on collation of the various national criteria used by different Hydrographic Offices to identify chart-correcting NMs. See Objective 3.1.3.2 for interaction with the Standardization of Nautical Publications Working Group (SNPWG).

Annual Work Programme

Since 1997, the CSC has prepared an annual work programme. Although, the programme has frequently had to be modified to reflect changing requirements, particularly delays resulting from various immediate or fundamental matters needing CSC Secretariat's involvement, it has provided a useful listing of the many tasks in which the CSC is involved.

CSC Circular Letters

A number of CSC Circular Letters have been issued since XVth IHC.

Objective 3.1.3.1

Development of new symbology for ship routing, including archipelagic sea lanes, vessel traffic services, environmentally sensitive areas, etc

Archipelagic Sea Lanes (ASLs)

Symbology has been devised for archipelagic sea lanes to meet the requirements which derived from proposals, submitted to IMO Safety of Navigation Sub-Committee (NAV 43), to implement such measures in Indonesian waters. The Secretary represented the IHO at the subsequent IMO Maritime Safety Committee (MSC 69) Ships' Routing Working Group meeting to give advice on the interpretation of these proposals. The symbology devised by the CSC was included in IMO SN/Circ.199 concerning ASLs and has been incorporated in a new section in IMO's publication, Ships' Routing. As no such routing measures had actually been implemented, their inclusion in M-4 Part B [B-435 and B-436] has awaited the rewriting of these sections during the CSC's review and revision of M-4 (see Task 3.1.1).

Vessel Traffic Services

Vessel Traffic Services, mandatory reporting systems and mandatory routing systems are similarly being included in B-488 and B-435 respectively in the CSC's review and revision of M-4 (see Task 3.1.1).

Environmentally Sensitive Sea Areas (ESSAs)

Following preparation and consideration of an initial CSC discussion paper [aimed at identifying the issues involved and obtaining views on a number of fundamental points], the CSC has continued to develop and consolidate its thoughts on ESSAs in general, providing input as necessary to the discussions in other fora, including briefs to the IHB for IMO. A number of relevant issues were raised in the revision of M-4 Part B Section 100 (see Task 3.1.1). An integral part of the work has been the monitoring of the discussions in IMO [with respect to the designation of Special Areas (SAs), Particularly Sensitive Sea Areas (PSSAs) and No-Anchoring Areas, to protect areas such as coral] and within the IHO, in particular, those within the Caribbean and Gulf of Mexico Hydrographic Commission concerning the charting of coral areas.

It is essential that decisions on the charting of any specific type of ESSA be considered in the wider context of all types of ESSAs. Although IMO discussions relate to specific measures, such measures cannot be taken in isolation and further proposals on the charting of ESSAs were inappropriate whilst IMO's discussions were in progress. IMO's draft Assembly Resolution 'Guidelines for the designation of Special Areas under MARPOL 73/78 and Guidelines for the identification and designation of Particularly Sensitive Sea Areas' is submitted to IMO Assembly's twenty-second session in November 2001. The draft ESSA specification [B-437], incorporating a specific specification on coral areas, is to be finalized before the IMO Assembly meets.

Other specifications

In addition to the specific features referred to in the description of Objective 3.1.3.1, work has been carried out on a number of other specifications, including:

Ferries and Routes for High Speed Craft (HSC)

M-4 B-438 [Ferries] has been revised and incorporates new paragraphs covering High Speed Craft, in response to concerns over the specific dangers they present in inshore waters. The CSC's completed specification was passed to TSMAD and to the IHB in 2001.

Proposal by Finland and Sweden for adopting "fairway area" as INT symbology

A proposal by Finland and Sweden to extend the ENC concept of digital fairways to show fairway areas surveyed to a high standard on paper charts has been considered. Accepting the need to show such fairways, a suitable definition and proposed symbology is being developed, incorporating relevant issues which were raised in the CSC's revision of M-4 Part B Section 100.

Objective 3.1.3.2

Progress of the work of the Committee for the Standardization of Nautical Publications, particularly the development of standard formats for Notices to Mariners, and for Sailing Directions and other nautical publications

CSC is not listed for action on Objective 3.1.3.2. However, it does have a related task, from XIVth IHC Decision No 44 [International Notices to Mariners] (PRO 19), which pre-dates establishment of the SNPWG. Discussion at the CSC's meeting (which was attended by a number of CHRIS members) concluded that CSC and SNPWG involvement concerns different aspects of NMs, with the SNPWG concentrating on digital publications, looking at themes and common words for referencing, and the CSC concentrating on identifying the varying criteria used by different HOs for selecting NMs. The CSC's actions on Decision No 44 are detailed under Objective 3.1.3.

Objective 3.1.3.3

Resolution of issues concerning the extension of the INT chart scheme to include large scale charts

In addition to providing comment on several chart schemes (see Objective 3.1.3), the CSC Chairman has given advice to the Caribbean and Gulf of Mexico Regional Hydrographic Commission on the international charting scheme for region B and has discussed aspects of the C2 regional charting with the regional co-ordinator.

Objective 3.1.4

Provide technical advice to Member States and users of IHO standards on cartographic systems and processes, and construction of national chart schemes

CSC is not mentioned for action but does provide advice to Member States either directly or via IHB. See Objective 3.1.3 Introduction.

Task 3.1.1

Revise, develop, and maintain the following publications: S-52, S-57 New Editions [2001-2002], M-4, M-11, S-23 [by 2003], S-59 [by 2005]

M-4 - Chart Specifications of the IHO and Regulations of the IHO for International (INT) Charts

Keeping the content of M-4 under continuous review is the principal task of the CSC [see TORs]. Decision 27 of XVth IHC endorsed the future work programme of CSC and decided that the CSC would undertake, over the next five years, a thorough review of M-4 with a view to achieving a higher degree of standardization. Additional tasks identified since XVth IHC, requiring the CSC's attention, have either

been taken up immediately or have been added to the list of topics to be considered, depending on their urgency relative to existing tasks; see paragraph on M-4 Part B below. The review of M-4, including all topics awaiting CSC's attention, should be completed before the XVIth IHC. The related revision of M-4 is in hand. Particular topics requiring more extensive attention will be noted for specific action later. Details of the review not yet incorporated in the revision, will be passed to the new Committee or Working Group for action.

M-4 Part A (formerly Part 3) - Regulations of the IHO for International (INT) Charts

The CSC's long standing task of reviewing and editing the Regulations of the IHO for International (INT) Charts, work on which had been halted to await the XVth IHC's Decision No 12 (PRO 43) on TR A3.4, involved a lot of further discussion, but has now been completed. The revised Regulations were published as Part A of M-4 [after the CSC's proposal, that the Regulations be made the first Part in M-4 with other Parts re-numbered, was adopted]; IHO Circular Letter 21/2000 refers. CSC Secretariat assisted the IHB with the final editorial changes.

M-4 Part B (formerly Part 1) - Chart Specifications of the IHO for Medium- and Large-scale National and International (INT) Charts

It is worth highlighting the fact that M-4 Part B provides an internationally-agreed, product specification and presentation library, for both national and international (INT) charts at medium- and large-scale. Its role is twofold, in that it provides:

- a. an explanation of the general concepts and rationale behind the symbology used in charting, much of which is relevant to both digital [ie electronic] and analogue [ie paper] charts;
- b. specific guidance for paper charts, including the use of text and symbology [specific guidance for digital (vector) charts is provided by S-52 and S-57; specifications for digital (raster) charts are detailed in S-61].

In implementing XVth IHC's Decision No 27, the main aims of the CSC's review and revision of M-4 Part B, referred to above, have been:

- a. **to identify those areas requiring revision;**
- b. **to insert new specifications, and update existing specifications, where necessary (paragraph numbers will be changed only *in extremis*);**
- c. **to clarify the two-fold role of M-4 Part B and its links with both analogue [ie paper] and digital [ie electronic] charts, as detailed above;**
- d. **to improve M-4 Part B's compatibility with S-52 and S-57;**
- e. **to make the wording more prescriptive where possible, continuing the progress which has been made towards greater international standardization over the last 15-20 years, but acknowledging that there is still a wide range of views on how features should be charted.**

The overall intention of the review and revision is to ensure that the specifications are factually complete, in order to provide a base-line to define specifications for charts now. This is required to allow us to move forward. References to digital charts, S-52, and S-57 will be included in the introductory sections. It is not considered appropriate in this revision to re-organize the entire content of M-4 Part B. Any re-organization to reflect its two-fold role, can be carried out at a later date. Initial work on the CSC task to investigate whether it should be involved in the harmonization of specifications for paper charts with ECDIS specifications, particularly with respect to co-ordination with the development of new symbology (colours and symbols) for electronic chart displays, has been carried out by the Secretariat.

Specific comments on particular aspects of the review and revision of M-4 Part B follow:

Part B Section 100. Section 100 has been reviewed and revision is in progress (as at October 2001). Preparation of the revised draft of section 100 provided the opportunity to consider fundamental issues concerning the whole of the review and revision of M-4 Part B. The initial draft revision was circulated to CSC members and to TSMAD Chairman. Responses have been incorporated in a second draft which is about to be circulated to members. Some of the issues which we raised in the context of the review of Section 100 are basic to defining the way in which other aspects of the CSC's work are carried forward. Those CSC tasks which had been awaiting completion of the revision of Section 100 are now being progressed, notably ESSAs.

Part B Section 200. Following from the revision of Section 100 and discussions at the CSC meeting, specifications B-170 to B-179 are being revised to include Zones of Confidence Diagrams (CATZOCs) and their use, in addition to Source and Reliability Diagrams. On completion, they will be moved to Section 200.

Part B Section 400. Review and revision of Section 400 is currently in hand (as at October 2001). Comments on some of this work are included elsewhere in this report.

Part B Section 500. Review and revision of Section B-500 will include consideration of XVth IHC's Decision No 9 [Issue of charts in bilingual version] (PRO 26). Decision 9 adopted the original proposal with amendments and passed it to the CSC for consideration of technical references. Initial identification of the technical references arising from PRO 26 has been carried out by the CSC Secretariat.

M-4 Part C (formerly Part 2) - Chart Specifications of the IHO for Small-scale International (INT) Charts

The CSC's review and editing of the Chart Specifications of the IHO for Small-scale International (INT) Charts, has been completed. The CSC's revised text is to be incorporated in M-4 as Part C. It was circulated to all IHO Member States by IHO CL 18/2001 (CSC Secretariat assisted with preparation of the CL) and was approved with one minor editorial amendment.

Amendments to Technical Resolutions (TR), associated with the publication of Parts A and C of M-4, have also been approved. Change pages for the insertion of new TR B 5.6 and the deletion of TRs B 5.1 and B 5.3 in M-3, are to be issued as soon as possible (as at November 2001).

M-11 - IHO Catalogue of International (INT) Charts and Guidance for Regional Co-ordinators of INT Chart Schemes

Work on the revision of the Guidance for Regional Co-ordinators of INT Chart Schemes completed before, and reported to, the XVth IHC had concentrated on revision of the details for each International Charting Region. Progress since then in producing the revised draft of the Guidance for Regional Coordinators of International (INT) Chart Schemes (formerly S-48) to be incorporated in M-11 [Catalogue of International (INT) Charts] has been somewhat limited. It became apparent that simple amalgamation of M-11 and S-48 would result in duplication of detail and inconsistencies in the content and style of the Annexes and Appendices. It was discussed briefly at the CSC's meeting and copies of the existing publication S-48 sent out to members. Although identification of this further work has delayed progress on the revision of the guidance, the resultant publication will be fully integrated. Subsequent re-assessment of priorities has meant that it has been put on hold for the present.

M-4 and INT1 link with S-52 and S-57

Following limited initial discussions involving the CSC Secretariat, a paper prepared by TSMAD concerning their production of a publication linking INT1 with S-57, was circulated to CSC members and considered at the CSC's meeting. Its relevance to the CSC's task to link INT1 with S-52 was noted. TSMAD have since published their document linking S-57 and INT1 as Annex D [Edition 1.0 dated November 2000] to S-57 Appendix B.1. It includes provision for the inclusion of S-52 data at the next edition, when the C&SMWG have completed creation of the S-52 symbols and the next edition of M-4 is available in digital form.

Task 3.3.5

Consult with Member States on the need to establish specific standards for cartography in navigable rivers and inland waterways [by 2003]

A new task, identified in the IHO Strategic Plan, involving the CSC. It has been added to the CSC Work Programme and the Chairman has had preliminary discussions with the IHB.

Objective 3.4.2

Participation in the development of standards for cartography and geographic information, and the alignment of IHO standards with more general standards for spatial data, through the work of: ... ISO TC 211...

CSC is not mentioned for action but was asked for comments by the IHB in 1997 on the possible adoption of M-4 as an ISO standard. The CSC Chairman's conclusion then was that the disadvantages outweighed any advantages. The subject was subsequently discussed at the CSC meeting in 2000 when it was agreed that the IHB would respond to ISO stating that they were still waiting for the Cover Sheet and that there was no support for M-4 becoming ISO, unless ISO can identify benefits to IHB. There has been no further discussion in the CSC since then.

Task 3.5.1

Revise, develop and maintain the following publications: ... M-12 [by 2003]

CSC is not mentioned for action but XVth IHC Decision No 40 adopted the Report on the work of the IHO on the Standardization of Lists of Lights [CONF.15/N/03] and stated 'It was decided to request the IHB to publish this Standard as a separate publication M-12 and to eliminate Chapter D from publication M-3.' CSC was tasked to investigate the impact of the Decision but has yet to receive a draft of the new publication M-12 to evaluate. The task will be taken up when M-12 is made available.

Task 4.1.1

Produce graphics for the digital versions of publications M-4, M-11, S-23

Digital M-4. CSC is not mentioned for action but CSC Secretariat has provided assistance in its production by proof-reading the draft digital version of M-4 and providing comments.

Task 4.1.4

Revise, develop and maintain the following publications: ... M-3 [[permanently updated]

CSC is not mentioned for action but one of the CSC's tasks related to M-4 is to consider IHO Resolutions referring to charting matters, include them in M-4 as appropriate, and propose any consequential amendments to the Resolutions. Such action, resulting from completion of M-4 Parts A and C, affecting TRs B 5.1, B 5.3 and B 5.6, is detailed under Task 3.1.1.