INTERNATIONAL HYDROGRAPHIC ORGANIZATION

ORGANISATION HYDROGRAPHIQUE INTERNATIONALE

CHART STANDARDIZATION & PAPER CHART WORKING GROUP (CSPCWG)

[A Working Group of the Committee on Hydrographic Requirements for Information Systems– CHRIS]

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CSPCWG Circular Letter: 03/2004

UKHO ref: HA317/010/031-01 & HA317/004/034-02

To CSPCWG Members Date 2 February 2004

Dear Colleagues,

Subject: M-11 and Guidance for the Preparation of INT Chart Schemes

Item B.1 on the CSPCWG Work Plan is to "Review S-48 and amalgamate within M-11". Although the agreed priority is low, IHB has requested that the work should be progressed as soon as possible, as S-48 has already been withdrawn. One of the reasons why this work had not been completed by the CSC was the realization that simply adding the revised S-48 as an appendix to M-11 would result in a confusing document that would be difficult to use and maintain. For this reason, I asked the Secretary to correspond directly with IHB to agree a revised structure for M-11. The result is at Annex A and I commend it to you.

The CSC made considerable progress in preparing a slimmed down version of the "Guidance for Regional Coordinators of INT Chart Schemes" (former S-48). Using their work as a basis, and including further amendments proposed by members of the CSC, the Secretary has produced a new draft at Annex B. For the convenience of ex CSC members, the changes since the last CSC draft are in red.

The two most significant changes are:

- to amend the former 4 scale bands (which were inconsistent with other IHB publications) into six usage bands which conform to S-57 (see proposed paragraph 3.4 "Scale").
- to add a much longer paragraph in place of the former paragraph 3.7, now headed "Limits and Overlaps", to provide some more detailed guidance on good practice in designing chart schemes, which I believe will be of help to less experienced hydrographic offices. As this new section has been adapted from UKHO internal guidance, I would particularly ask you to examine it closely to ensure it is suitable for use for International chart schemes, and comment on whether you consider it to be a helpful addition.

As International chart schemes are partly designed by national HOs, it seems appropriate to re-title these notes as "Guidance for the Preparation of International Chart Schemes", rather than limiting the guidance for Regional Coordinators.

I would be grateful if you would supply your comments on the revised structure (Annex A) and the revised Guidance (Annex B), **in particular commenting on the proposed title, the amendments to the Scale section, and the new section on Limits and Overlaps, by 13 April 2004**. This allows for a 10 week consultation period, extended from the usual 8 weeks as there are now four issues currently under consideration (ESSAs, ASLs, Turbines and M-11).

Yours sincerely,

Peter G.B. Jones,
Chairman

Annex A: New proposal by CSPCWG Secretary for contents of M-11, after consultation with IHB.

Annex B: Guidance for the Preparation of International Chart Schemes.

Annex A
to CSC CL 3/2004

New proposal by CSPCWG Secretary for contents of M-11
after consultation with IHB.

Title page for new M-11
Contents of M-11 *(Details Parts A and B – similar to M-4)*
Preface *(Needs some revision and updating)*
List of effective pages

Title page to Part A (Guidance for the Preparation of International Chart Schemes)
Contents of Part A
1 - Introduction
2 - Objective and Concept
3 - Procedure
Appendix 1 Potential Printer Nations
Appendix 2 Paper sizes *– merge of ex Annex C to M-11 & S-48 Appendix A)*

Title page to Part B (Catalogue)
Introduction *(from the Introduction to old M-11, may need some revision)*
IHO Charting Regions Diagram *(needs to be replaced by the amended diagram in INT Regs (M-4 A204.8).*
(no need for a contents page, the diagram does the job)
List of IHO member states with ISO 2 letter codes *(ex Annex B)*
International Charts at scale 1:10M
Region A
- Title page, including constitution of Charting Group
- limit of region/indexes *(amend "Zone" to "Region")*
- Small-scale INT charts
- larger scales

Region B…etc..to Region M *(layout as Region A, largely unchanged from existing M-11)*
Numerical Index to INT charts *(ex Annex E)*

Notes by Secretary to CSPCWG:

The two main parts have been called Part A and Part B, so that the structure of M-11 is similar to M-4. Also the Guidance on which an INT scheme is based, has been placed first in a similar way to which the regulations for INT charts have been placed first in M-4.

Besides the re-structuring, the most notable change is the removal of the former Annexes reporting the progress of each Regional Charting Group. These reports are of temporary nature and validity and are therefore not appropriate for inclusion in an IHO Publication. Such reports were assembled into a conference document in 1997 and appear in the proceedings for the XVth IHC. Although this was omitted in 2002, the IHB has undertaken to ensure that these reports be prepared for the 2007 IHC.

Updates and additions to Appendix 1 and 2 will be requested by IHB when the final version is sent out for approval by Member States.

When completed, the CSPCWG will remain responsible for reviewing and updating the Guidance notes if and when necessary. IHB would be responsible for maintaining the rest of the document.

Annex B
to CSC CL 3/2004

GUIDANCE FOR THE PREPARATION OF INTERNATIONAL CHART SCHEMES

1. INTRODUCTION

1.1. Regional Hydrographic Commissions (RHC), the creation of which was encouraged by the IHB under IHO Administrative Resolution T1.2, bring together those Member States having common regional problems of charting, research or data collection, so that cooperative solutions to these problems may be reached. Regional Charting Groups (RCG) or Committees may also exist. These were set up following Decision 26 of the 1982 IHC with "a primary objective of developing integrated schemes of INT charts for the areas concerned." They consist of any Member States with an interest in the charting of a particular region.

1.2. The Chart Standardization and Paper Chart Working Group (CSPCWG) (formerly the Chart Standardization Committee (CSC)) has a range of duties in the charting field, as set out in IHO Technical Resolutions (TR) B5.4, B5.6 and K2.11. It has an on-going role (TR B5.4) to advise the IHB on the setting up of RHCs / RCGs to develop integrated schemes of International (INT) charts at medium and large-scales. Under TR B5.4, it also has the responsibility to offer advice on the construction of INT chart schemes, in order to ensure homogeneity. This role of the CSPCWG is purely consultative.

1.3. This basic guidance, which has been prepared by the Chairman and Secretary of the CSPCWG, draws upon, and supersedes, that contained in former IHO Publication SP-48. It is intended to be used as an aide-memoire and should be used in conjunction with the Regulations of the IHO for International (INT) Charts in M-4, Part A, and the Specifications of the IHO for International Charts in M-4 Parts B & C.

2. OBJECTIVE AND CONCEPT

2.1. The overall objective for International charts differs from that for National charts, which must permit the safe navigation of **all** classes of vessels throughout their coastal waters, including major ports visited by the largest vessels and minor arms of the sea which are of purely local interest. National charts must also satisfy the requirement for an information source on behalf of a variety of national users other than navigators. The combined effect of these two requirements has caused national chart series to cover national waters in great detail. Very large scale charts may be used for port plans, and there are usually at least two continuous coastal series, one on a relatively large-scale, the other slightly smaller.

2.2. For International charts, the overall objective is the creation of a compact set of medium- and large-scale charts that are specifically designed for planning, coastal or crossing navigation and access to ports used by ships engaged in international trade. Their content will, therefore, differ from that of national charts. A careful selection of detail on International (INT) charts will allow updates to be restricted to items which are essential for international shipping, thus keeping the maintenance of the series to manageable proportions. Conceived for the needs of the international mariner, INT chart design will be uninhibited by national boundaries or political considerations. They will not attempt to fulfil the needs of local shipping nor act as national information sources.

2.3. In all cases, the content of INT charts must be complete and comprehensive for use by international mariners. They should not require reference to other national charts for any information required by the international mariner.

2.4. It is recommended that, for the sake of economy, national charts series are designed so that selected charts can be used for the International chart series (see 3.3).

3. PROCEDURE

3.1. **Port Selection**. The ports to be covered by large scale and, where necessary, approach plans should be selected through consultation within the Regional Charting Group. It is important to establish the frequency of use of the ports by international shipping. Statistical data for the volume of traffic at each port should be sought from the relevant authorities. This may include the net registered tonnage of ships arriving each year and the proportion of this tonnage under foreign flags. Where statistical data are not available, other approaches can be used, such as a study of the traffic of companies using a particular area, the number of charts sold or advice from the national authority. In less developed areas, consideration can be given to including harbours because of their importance as regional centres or as the main port of an island or group of islands. Other ports and anchorages may need to be included to satisfy the needs of cruise liners. This selection of ports forms the framework around which the chart scheme is built. The choice of ports must be kept under review in the light of new developments and the chart scheme adjusted accordingly.

3.2. **Shipping Routes**. The major routes along the coasts and in the approaches to ports that are used by international shipping must be identified. Where there is a good chance of obtaining a response, existing chart users and international commercial shipping companies should be consulted. In general, a better response will be obtained if users are asked to comment on options rather than to come up with solutions on their own.

3.3. **Comparison of Catalogues**. All relevant IHO Member States' chart catalogues should be examined. The catalogues of other countries, in particular those providing extensive regional or world cover, are likely to give a better indication of the scales and numbers of charts likely to be appropriate for the international mariner than that of the nation whose waters are being considered. Ideally, the INT chart limits and scales should conform to the corresponding charts, present or projected, in the local national series. Such charts, which may not always be the largest scale national charts, can then be modified, or prepared from the start, to full INT specifications. They can then often be published with a minimum of delay. All INT charts must be compiled to full INT specifications. It will not always be possible to simply select INT charts from existing national series. Where new limits and scales are proposed for INT charts, the member country should be encouraged to amend their national chart series to accommodate the INT coverage, so that, for example, the smaller of the two national coastal series may be utilised for International charts.

3.4. **Scale**.

3.4.1. The choice of scales should depend upon the navigational requirements of international shipping. Although the precise structure of the scheme may vary from area to area, reflecting different hydrographic and navigational requirements, it will usually be possible to identify six navigational purposes for charts (as defined in S-57 Appendix B). Note: the scale bands below are those that are usually suitable for International charts; for National series, the scale bands may well be different. (For example, the coastal band may include charts as large as 1:50 000).

- **Berthing.** Detailed data to aid berthing, at very large scales.
- **Harbour.** Generally at scales **larger than 1:50 000**, these will provide for port entry, and navigating within ports, harbours, anchorages, bays, rivers and canals. Sometimes the largest scale equivalent national charts will be followed; sometimes the smaller of such scales will be adequate for the Intenational series, since it is in harbour plans that the national information document role of nautical charts is most clearly seen.
- **Approach.** Generally at scales **between 1:50 000 and 1:150 000**, for navigating in the approaches to ports, in major channels or through intricate or congested waters. Such areas may well contain complicated traffic routeing measures. Uncomplicated port approaches should not warrant the provision of separate approach charts; in such cases, the harbour charts should be schemed with sufficient sea-room offshore to permit the safe transfer by the user from the appropriate chart of the coastal series.

- **Coastal.** Generally at scales **between 1:150 000 and 1:500 000**. For coastal navigation. Many national series have two continuous coastal series; usually the smaller scale will be adequate for the needs of international shipping. It is desirable, but not essential, that a continuous coastal series should have a uniform scale since this offers advantages to the navigator in transferring fixes; the cartographer in compiling the overlaps; and it may also facilitate the creation of a seamless database for Electronic Navigational Charts (ENCs). In some areas, however, it may be desirable to have intermediate scales to meet the needs of a large volume of offshore traffic or to give overall cover to extensive offshore shoal areas or outlying island groups.
- **General.** Generally at scales between **1:500 000 and 1:2 000 000**. These medium scale charts are intended for landfall identification and route planning.
- **Overview.** Generally at **1: 2 000 000 and smaller**, intended for route planning and ocean crossing. These will normally be provided by the two established series of small scale INT charts, details of which can be found in M-11 (Part B).

3.4.2. Charts at a scale larger than 1: 2 000 000 should be compiled in accordance with the Specifications for Medium and large-scale charts (M-4 part B). Charts smaller than 1:2 000 000 should be compiled in accordance with the Specifications for Small-scale charts (M-4 part C). Charts at scale of 1:2 000 000 may be considered to be either Medium-scale charts or Small-scale charts, according to the nature of charting in that specific area.

3.4.3. If there is no conflict with other important criteria, the charting scale should be compatible with the quality of the original source information. Extensive areas covered by very old surveys may require a reduction in scale to take this into account, pending the completion of modern surveys which will permit the production of larger scale charts.

3.5. **Projections and mid-latitudes**. The choice of projection and in the case of Mercator projections, the mid-latitude, should be made in accordance with the INT Specifications, contained in M-4, B-203 and B-211.

3.6. **Dimensions**. Within the standards laid down in the INT Specifications [M-4, B-222] the regional preferences for the chart dimensions should be determined. The printing capabilities of **all** potential Producer and Printer Nations should be investigated, in order to determine both the preferred and maximum sizes to be used for charts in the regional scheme. Appendix 1 lists potential Printer Nations while Appendix 2 gives details of the use of A0 size paper.

3.7. **Limits and Overlaps**.

3.7.1. It is the detailed limits and the degree and arrangement of overlaps, which largely determine the quality of a scheme. In general, overlaps between INT charts should be sufficient to enable the mariner to safely transfer his position from one chart to the next. Larger overlaps may sometimes be necessary where, for example, an important strait is covered on two charts to allow an adequate depiction of both approaches. Particular care is needed to ensure the provision of adequate overlaps with schemes in adjoining Regions.

3.7.2. For schemes of coastal charts, ideally each major port should lie towards the centre of a sheet, allowing approach from all directions. This principle can, therefore, provide the starting point for the remainder of the sheet limits.

3.7.3. The area covered by any chart should be a coherent unit where possible, e.g. an ocean, a bay, a port approach, a strait. If the chart has an obvious title this condition is usually satisfied.

3.7.4. Each chart should have adequate sea room and allow satisfactory transfer to adjoining charts and to the next larger or smaller scales. This is particularly important in any chart used for entering and leaving port.

3.7.5. The land area shown should include the visual and radar horizons.

3.7.6. Overlaps should include at least one good fixing point. They should be of such extent as to allow adequate time to transfer the course and ship's position, but not be so large as to create a need to duplicate correction unnecessarily. They need to avoid cutting off visual marks or radiobeacons near the edges of charts that might be used in position fixing. On coasts where there are many offlying islands and shoals, overlaps need to be large enough to include visual transits of objects in line.

3.7.7. The objects that determine the heading of a vessel should appear on the chart even at the expense of a large overlap.

3.7.8. There should be room for the title, notes, scales etc, without obliterating important hydrographic detail, or reducing the effective overlap between charts.

3.7.9. Features which should be within limits if at all possible and not just outside them are:

- Lights, radio aids, navigational buoys and beacons (especially landfall buoys on port approach sheets and beacons controlling transits in fairways).
- Pilot boarding stations, anchorages, radio reporting points.
- Prominent dangers, protruding coasts and offshore islands.
- Traffic separation schemes, dredged channels, recommended tracks etc. Features under this heading should not be split by chart limits, unless, like some separation schemes, they are extensive enough to cover several charts.
- Conspicuous or prominent features (natural or artificial) on the land, e.g. radio masts, chimneys, hill summits.

3.7.10. It is possible occasionally to meet the above requirements by moving the limits in one direction or another, changing the scale or the mid latitude in a Mercator scheme, or increasing the number of charts. The remaining possibilities are:

- to break the inner border and continue the work to the outer border (but preferably not beyond).
- to continue the work which cannot be included in situ, in an inset plan, if there is room for this (not normally appropriate for fixing marks).
- to design the chart in separate sections, for example to cover a North/South oriented channel.

3.8. **Chart Numbering**.

3.8.1. Blocks of approved INT chart numbers, sub-divided on a regional basis, have been allocated to major areas. These numbers are listed in M4, part A-204, together with the principles by which the numbers are allocated within a region.

3.8.2. In some instances, these allocations will need to be agreed with the Coordinators of adjoining regions who may share the same block. It is possible, if necessary, to transfer blocks of numbers fom one region to another, with the agreement of the relevant Regional Coordinators and the CSPCWG Chairman.

3.8.3. When a producer replaces an existing International Chart by a New International Chart (as defined in M-4 Part A-401.2) then a new INT number should be allocated by the Regional Coordinator.

3.9. **Draft Schemes**. A first draft of the INT chart scheme should be prepared. Indexes should be drawn on a large enough scale to show clearly where the proposed chart limits intersect coastline detail. These indexes should be accompanied by a list of chart numbers, together with the chart scales, geographical limits and inner neat-line dimensions. Where proposed INT charts correspond to existing national charts, this should be indicated. In some complex cases, explanatory notes of how particular sheets were schemed should be included.

3.10. **Consultation**.

3.10.1. Draft INT chart schemes should be circulated for comment to the following:

- All members of the Regional Charting Group and, where appropriate, members of the Regional Hydrographic Commission.
- The Coordinators of adjoining Regional Charting Groups, if the scheme impacts on their region.
- Hydrographic Offices producing or printing charts in the region.
- The Chairman of the CSPCWG.
- The International Hydrographic Bureau.

3.10.2. Comments received should be considered and discussed as necessary and the initial scheme should be refined into a second draft version. It may be necessary to produce further draft versions before final agreement is obtained. In general, the smaller the scale the more necessary it is to obtain a wide consensus. This consultation can generally be effected by correspondence. However, meetings of the Regional Charting Group at significant points will speed up the process. The final version of the scheme should be submitted to the RHC for formal approval.

3.11. **Allocation of Producers**. (For further information, see M-4 A-203).

3.11.1. In most cases, the allocation of Producer Nations for INT charts will be a fairly straightforward process. For most medium- and large-scale INT charts, the Producer Nation will be the IHO Member State with responsibility for charting the waters covered by these charts. There will, however, be some exceptions:

- Where a chart covers the waters of more than one nation, a single Producer Nation should normally be agreed. However, if this is not possible, or if the nations prefer, they may collaborate in the production, the resulting chart carrying both nations' seals. Examples of collaboration include: two nations compiling sections of the chart, with one of the nations joining the sections and producing the finished repromat; one nation compiling the chart, the other nation completing quality control, repromat production and printing for both nations.
- Where a chart has been included in the INT scheme, but the national HO is unable to effect its production within an acceptable timescale, its production may be undertaken, with the agreement of the national HO concerned, by a potential Printer Nation.

3.11.2. When the allocation of Producer Nations for all the proposed INT charts has been completed, an agreed production schedule should be determined. This will facilitate the forward planning for the adoption of these charts by potential Printer Nations and will enable the Regional Charting Group to monitor future progress. It would also be advisable, at this stage, to give consideration to the preparation of a Regional INT Chart Catalogue. This would ultimately provide the source data for M-11 (Part B).

3.12. **Review**. It will be necessary to keep these INT chart schemes under continuous review. Adjustments will be required in order to cater for the expansion of existing ports, the development of new ports, changes to routeing measures and the re-positioning of major navigational aids. The consultation process (Section 3.10) need not aim to finalise every detail of every chart in the scheme. Once the general requirements, scales and limits have been agreed, it may be left to the designated Producer Nation to make the final detailed decisions. It will not normally be necessary to obtain the approval of the Coordinator of the RCG for a minor amendment to an individual chart. It can often take many years to finalise a regional INT scheme and, in that time, national charts which are candidates for inclusion may themselves have been re-schemed, although the adequacy of the overall coverage will not have changed.

APPENDIX 1

POTENTIAL PRINTER NATIONS
(Based on replies to IHB Circular Letter 20/1990)

IHO Member State	Areas in which Member State is a potential printer
Australia	Within and adjoining Australia's area of charting responsibility
Canada	Adjacent US waters
China	Not specified
Denmark	Baltic and North Seas
France	Worldwide
Germany	Baltic and North Seas, NE Atlantic
Greece	Eastern Mediterranean
India	Not specified
Italy	Mediterranean and Black Seas
Netherlands	German Bight, French coast
New Zealand	Southwest Pacific Ocean
Pakistan	Arabian Sea and Indian Ocean
Portugal	East & West Coasts of Africa
Russian Federation	Not specified
Spain	Western Mediterranean Sea and Eastern Atlantic Ocean
Sweden	Waters around Sweden
Turkey	Black Sea, Aegean Sea, Eastern Mediterranean
UK	Worldwide
USA	Worldwide
Yugoslavia	Adriatic Sea

IHB to request updates when final version sent to M/S.

APPENDIX 2

DIMENSIONS OF FORMATS USED

Format	Dimensions
A0	1189 x 841 mm
DE+	1189 x 710 mm
GA (Grand aigle)	1060 x 750 mm
DE (Double Elephant)	1040 x 710 mm
B1	960 x 630 mm
A1	841 x 594 mm
DA (Demi-aigle)	750 x 530 mm
½ DE	710 x 520 mm

USE OF A0 PAPER

(Based on replies to IHB Circular Letter 20/1990)

IHO Member State	Agree to use of A0 for maximum size	Can print A0 size
Australia	Yes (Exceptionally)	Yes
Belgium	Yes	Yes
Brazil	Yes	Yes
Canada	Yes	Yes
Chile	Yes	Yes
China	Yes	Yes
Denmark	Yes (Exceptionally)	Yes
Fiji		No
Finland	Yes	Yes
France	Yes	Yes
Germany	Yes	Yes
Greece	Yes	No
India	No	Yes
Italy	Yes	Yes
Republic of Korea	No	No
Malaysia	No	No
Netherlands	Yes (Exceptionally)	Yes
New Zealand	No	No
Norway	Yes	Yes
Pakistan	Yes	Yes
Peru	Yes	Yes
Poland	Yes	Yes
Portugal	Yes	Yes
Russian Federation	Yes	Yes
South Africa	No	Yes
Spain	Yes	Yes
Sweden	Yes (Exceptionally)	Yes
Thailand	Yes	Yes
Turkey	Yes	Yes
UK	Yes	Yes
USA	Yes	Yes
Venezuela	Yes	Yes
Yugoslavia	Yes	Yes

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