



## CHART STANDARDIZATION & PAPER CHART WORKING GROUP (CSPCWG)

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

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To CSPCWG Members

Date 5 May 2004

Dear Colleagues,

### **Subject: Guidance for Preparation and Maintenance of INT Chart Schemes**

16 responses were received to CSPCWG CL 03/2004. Thank you all for your helpful remarks.

The suggested re-format of M-11 (CL 03/2004, Annex A) was unanimously endorsed, including the removal of the Regional Report annexes. The consequential amendments to M-4 can be made as editorial amendments.

The redrafted “Guidance” (CL 03/2004, Annex B) also met with general approval, with a few, mainly minor, alterations suggested, which we have included in the revised version, which accompanies this letter at Annex. The changes are highlighted in red, with the more significant ones explained below:

- Netherlands suggested expanding the title to include “and Maintenance”, with some consequential additions at paragraphs 3.12 and 3.13.
- The term “crossing navigation” caused some confusion. This has been removed and “landfall” inserted to cover the objectives of medium and large scale international charts with more universally accepted terms.
- The most controversial area was the proposed new scale bands (or ranges). Several members expressed concern about following the S-57 draft Edition 4 use of radar scale ranges, the exact definitions of which are still being debated. Furthermore, by following them exactly, we would necessarily use scale groups such as 1:22 000 to 1:89 999, which is entirely inappropriate for paper charts (see M-4 B-211). It seemed best therefore to remove the direct reference to S-57, but retain the navigational purposes terminology, as this can be consistent between the different chart types. Members were evenly divided on the use of the words “bands” or “ranges”; we have retained “bands” to avoid the S-57 connection with radar ranges.

The secretary examined existing mature INT chart schemes to see what actual scales have been used in practice for the six navigational purposes and we have consequently proposed some changes which are more in line with actuality (and also closer to the ranges currently proposed for S-57). In

practice, the scales for different navigational purposes actually overlap, but we have avoided this as it might be confusing. Consequently, for example, we have not attempted to specify that 1:75 000 is either approach or coastal (it could be either or, in some cases, fulfil both purposes). These nominal scales are general guidelines, not intended to be prescriptive.

1:2 000 000 has been retained for the division between General and Overview, in accordance with the titles of M-4 Parts B & C.

- The new section on Limits and Overlaps was very well received, with only two minor alterations requested.
- Some suggested enhancements to the Chart Numbering section have been included to embed recognised good practice.
- The need to recognise one nation as producer, even in cases of collaboration has been clarified.
- The addition of “(crests)” as an alternative to “seals” has been added as three members expressed a preference, although it is noted that M-4 always refers to seals.

Finally, some recipients of the first draft evidently found some formatting errors, which did not manifest themselves when printed in UK. I apologise for this, and hope they have been removed from the revised version.

I would be grateful if you would advise me by **2 June 2004** whether there are any further changes which you would wish to see included, before I ask IHB to amalgamate the revised “Guidance” into M-4, in the agreed new format.

Yours sincerely,



Peter G.B. Jones,  
Chairman

Annex:

Guidance for the Preparation and Maintenance of International Chart Schemes (revised draft April 2004)

**GUIDANCE FOR THE PREPARATION AND MAINTENANCE  
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 **XII IHC in 1982** 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. **The Chairman of such a group is referred to as the Regional Co-ordinator.**
  
- 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 and 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, **landfall and 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~~ should 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, **as required for all International charts**. 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 ~~the following six~~ navigational purposes for charts: ~~(as defined in S57 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. **It will often be appropriate to include these as inset plans on Harbour charts.**

- **Harbour.** Generally at scales larger than 1:~~50 000~~30 000 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 International 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~~ 30 000 and 75 000 for navigating in the approaches to ports, in major channels or through intricate or congested waters. Such areas may well contain complicated traffic routing measures. Uncomplicated port approaches should not warrant the provision of separate approach charts; in such cases, the harbour charts should be sited 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~~ 75 000 and 350 000, 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~~ 350 000 and 1:2 000 000. These medium scale charts are intended for landfall identification and **non-oceanic** 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. ~~Note: It will not always be necessary to use all the above scale bands. (For example, in uncomplicated areas an approach chart will not usually be necessary). Also, the scale bands above 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 well include charts as large scale as 1:50 000). 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 **not** normally be larger than the available source material. ~~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. **They should be designed so that changing charts in an area of complicated navigation is avoided.** 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 off-lying 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 **the chart's** 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. **There should preferably be a logical order to the allocated INT numbers (e.g. a series of charts numbered sequentially around a coast).**

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 from 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~~ i.e. one where the area covered has changed significantly) then a new INT number should be allocated by the Regional Coordinator. **The old INT number should preferably not be re-used for at least five years.**

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 .**
- 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. (For further information, see M-4 A-203).
- 3.11.2. 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~~ Nations may collaborate in the production, the resulting chart carrying both nations' seals (**crests**). Examples of collaboration include: two nations compiling sections of the chart, with one of the nations joining the sections and producing the finished reprostat; one nation compiling the chart, the other nation completing quality control, reprostat production and printing for both nations. **In such cases, the Producer Nation will be that nation which is responsible for the content and final compilation of the chart.**
- 3.11.3. 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).
- 3.11.4. 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.
- 3.12. **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.

However, for major changes to a chart, for partial re-scheming and for the addition or deletion of an INT chart, the RCG should be consulted, via the Regional Co-ordinator.

- 3.13. **Maintenance of M-11.** Any changes to scale, limits or numbering of International Charts, which affect M-11 Part B 'Catalogue of International Charts', must be notified to IHB, who will update the Catalogue.

APPENDIX 1  
POTENTIAL PRINTER NATIONS

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

<u>IHO Member State</u>	<u>Areas in which Member State is a potential printer</u>
Australia	Within and adjoining Australia's area of charting responsibility
Canada	Adjacent US waters
China	Not specified
Denmark	Baltic and North Seas
Finland	Baltic Sea area around Finland
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
Cuba	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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