Overview of
IHO Standards & Specifications
Organisation

Michel Huet
International Hydrographic Bureau, Monaco

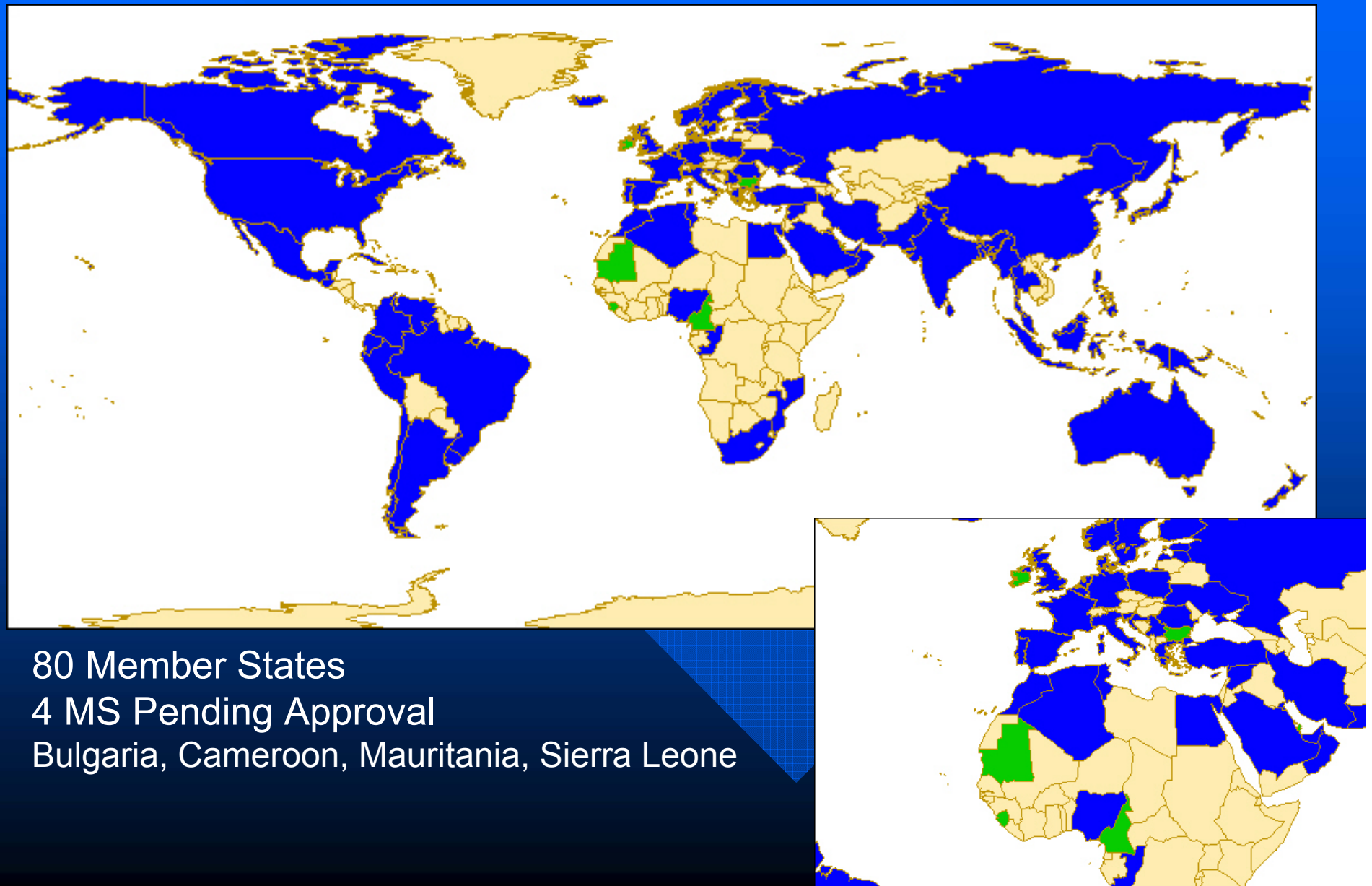
CHRIS-20, Nov 2008

IHO Definition of Hydrography

"That branch of applied sciences which deals with the measurement and description of the features of the sea and coastal areas for the primary purpose of navigation and all other marine purposes and activities including (inter alia) offshore activities, research, protection of the environment and prediction services"

New definition of "Hydrography", approved by IHO Member States in November 2002

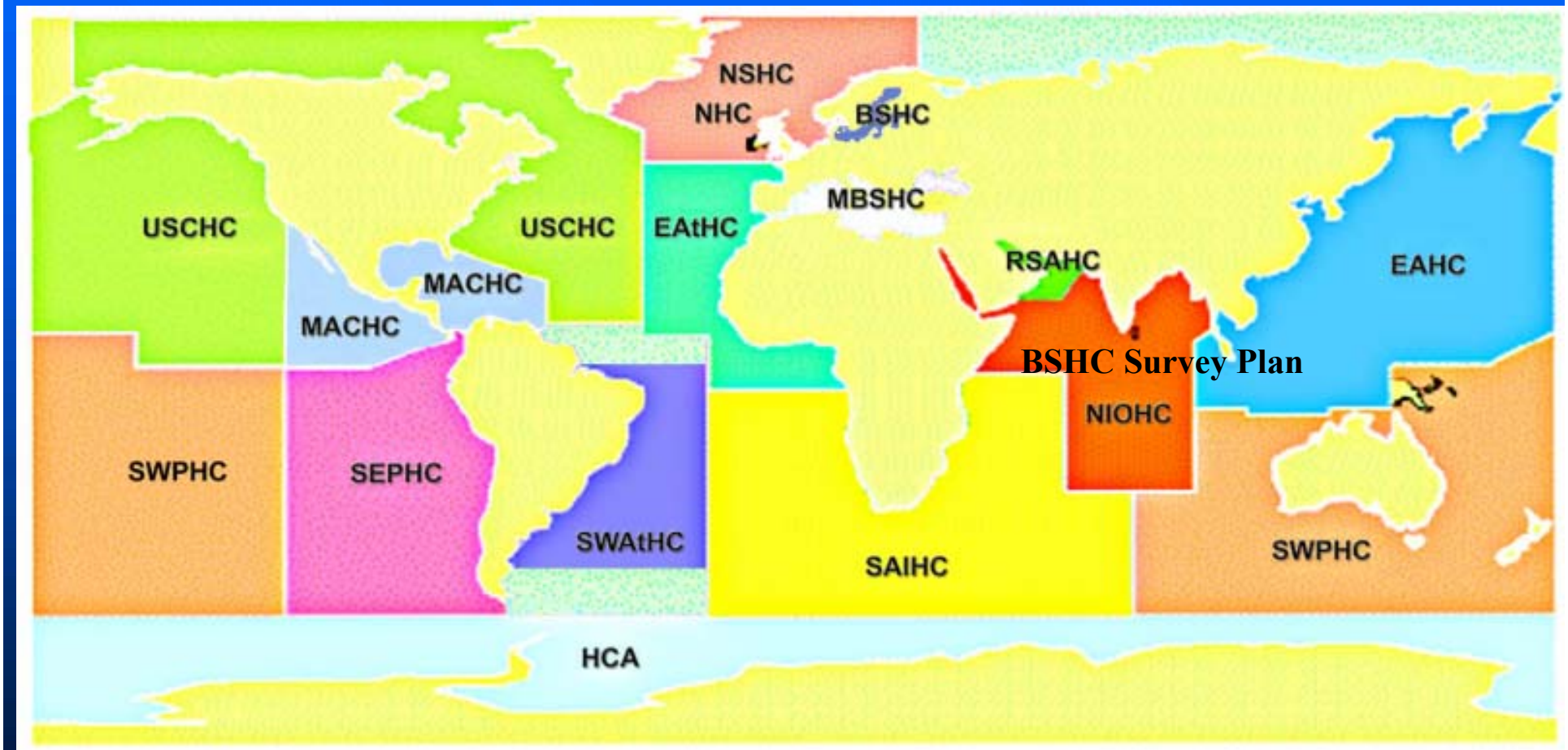
Structure – International Coordination/Cooperation



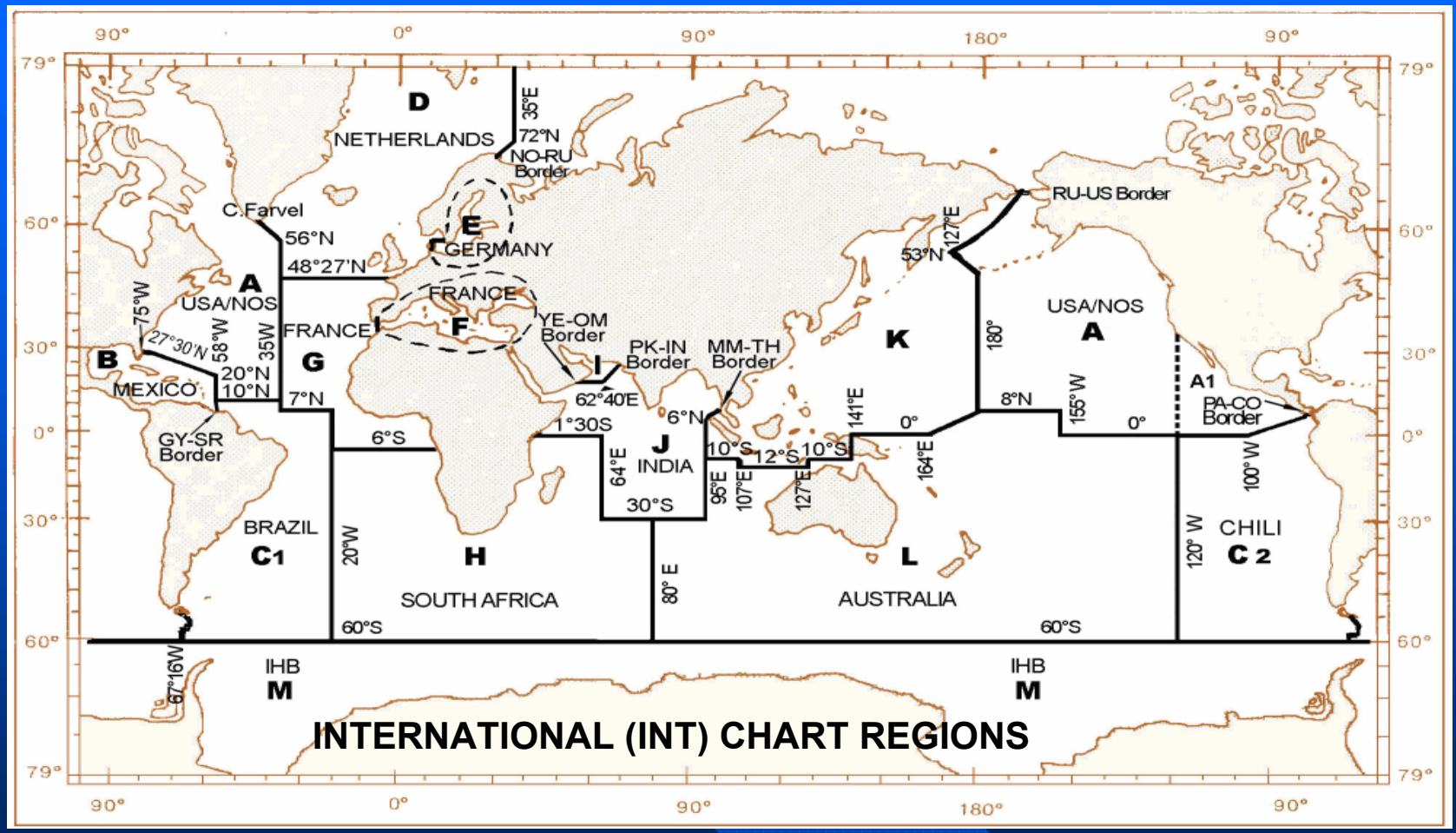
80 Member States
4 MS Pending Approval
Bulgaria, Cameroon, Mauritania, Sierra Leone

Structure – Regional Coordination/Cooperation

15 Regional Hydrographic Commissions



Structure – Regional Coordination/Cooperation

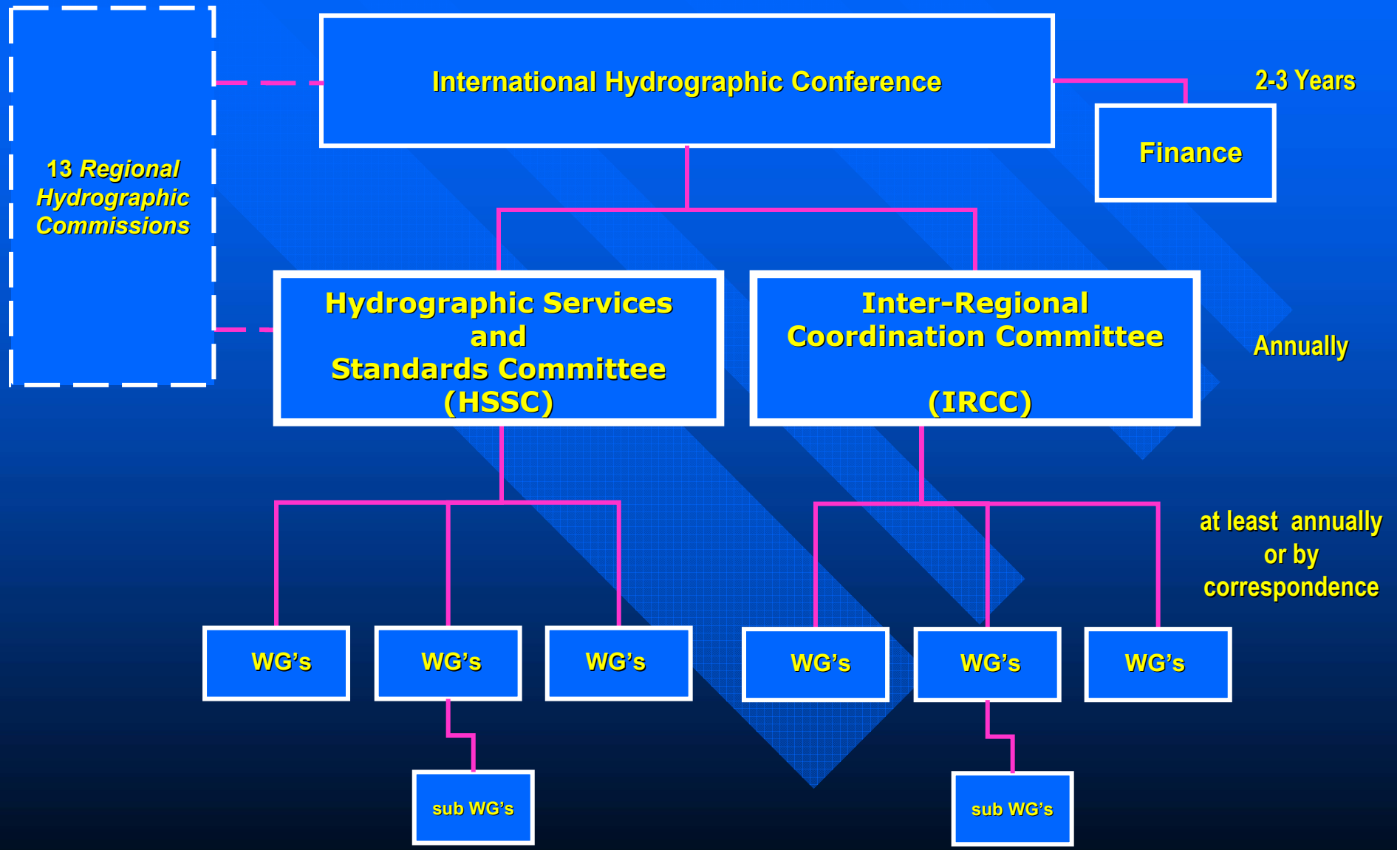


THE INTERNATIONAL (INT) CHART

Adopted in 1971 - worldwide chart series (INT Charts) produced to a single set of agreed specifications.

Under this arrangement, member nations wishing to produce their own versions of another members INT charts, may do so by obtaining (by mutual agreement), copies of the necessary reproducible material and printing their own copies.

Revised IHO – Structure – January 2009



Structure – IHO Committees and Working Groups

WEND World-wide Electronic Navigational chart Database, in order to speed up the achievement of a worldwide ENC coverage and updating, uniform data quality

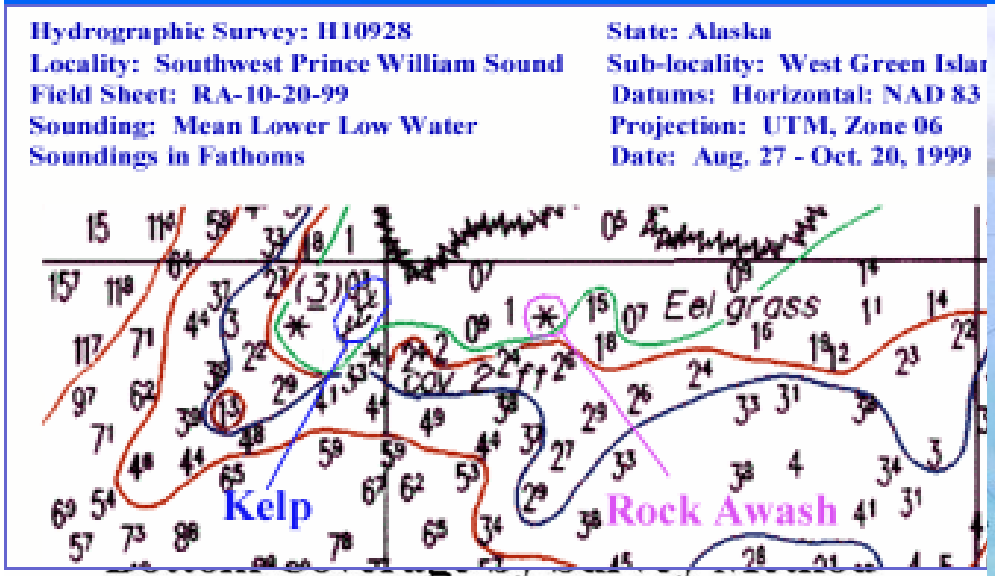
- WEND TG WEND Task Group

CHRIS Committee on Hydrographic Requirements for Information Systems

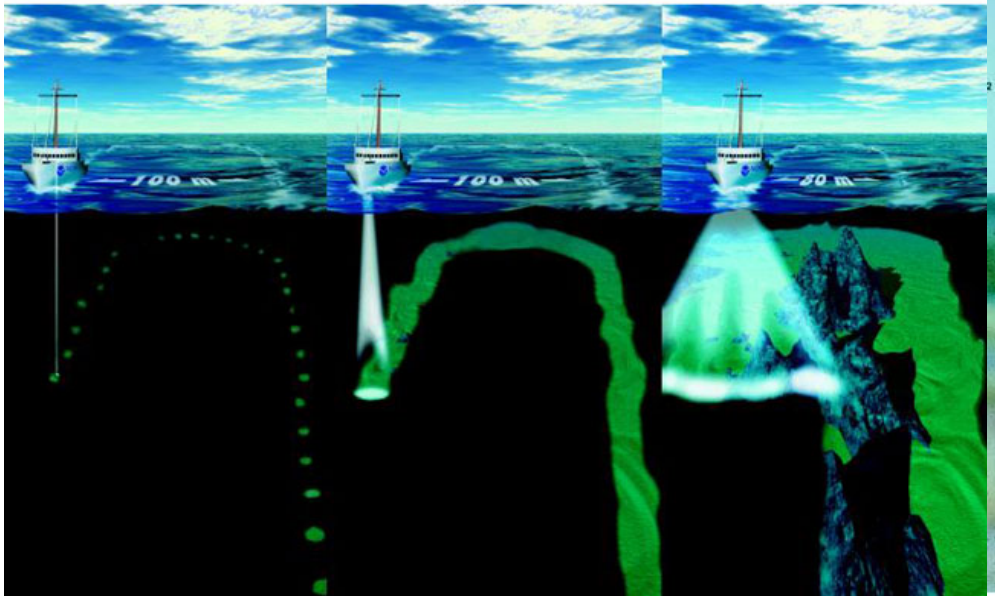
- CSMWG Colours and Symbols Maintenance Working Group
- CSPCWG Chart Standardization and Paper Charts Working Group
- SNPWG Standardization of Nautical Publications Working Group
- DPSWG Data Protection Scheme Working Group
- TSMAD Transfer Standard Maintenance and Application Development Working Group
- HGMIO Harmonizing Group on Marine Information Overlays
- DQWG Data Quality Working Group
- HCIWWG Hydrography & Cartography in Inland Waters Working Group
- MSDIWG Marine Spatial Data Infrastructure Working Group

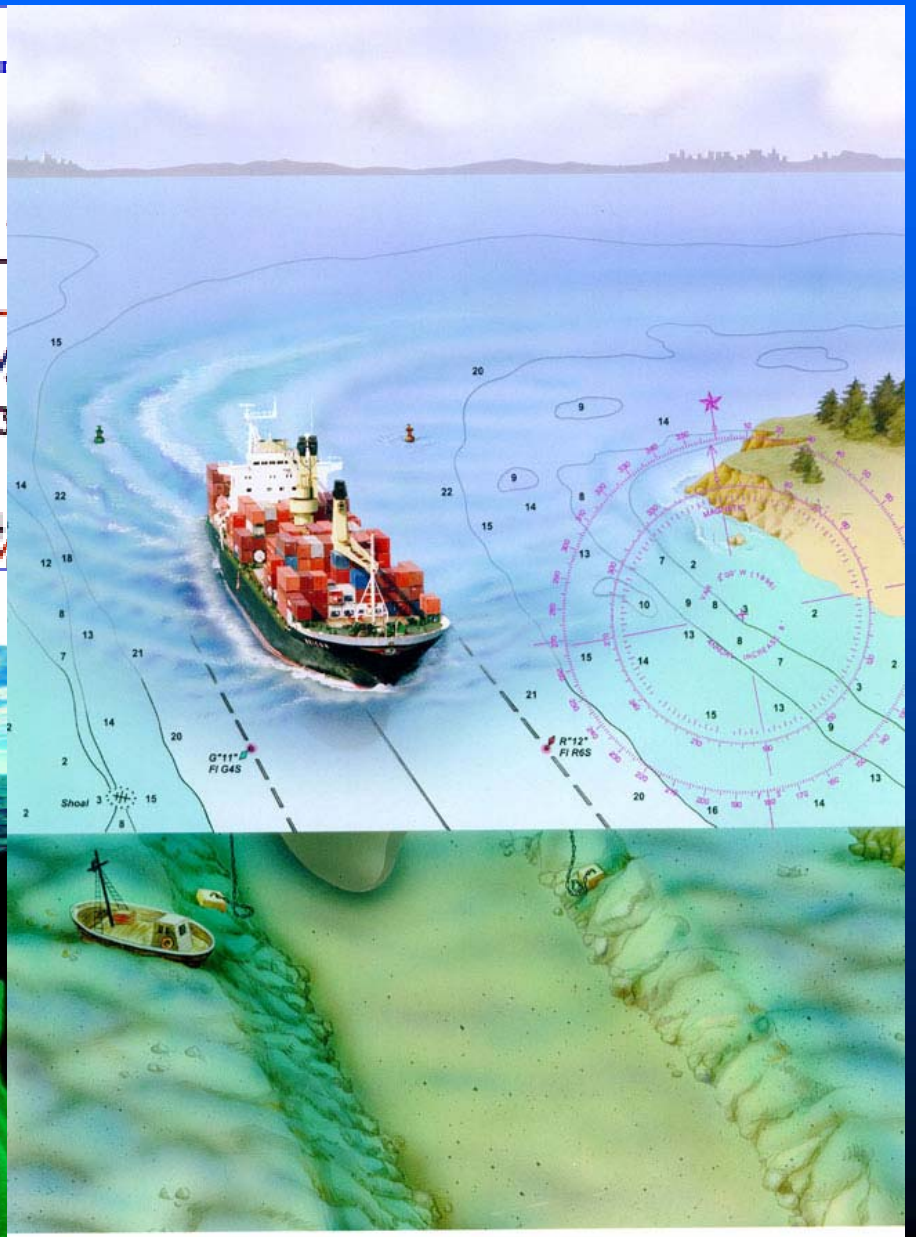
Data Collection

Data Collection – Coastal/Offshore Surveys

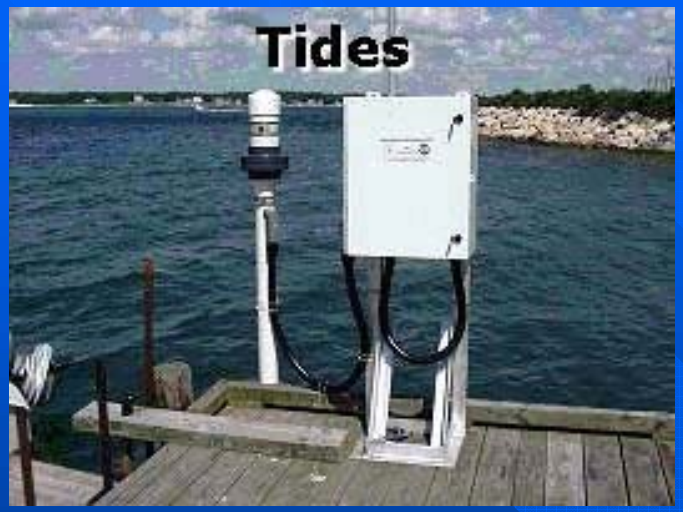


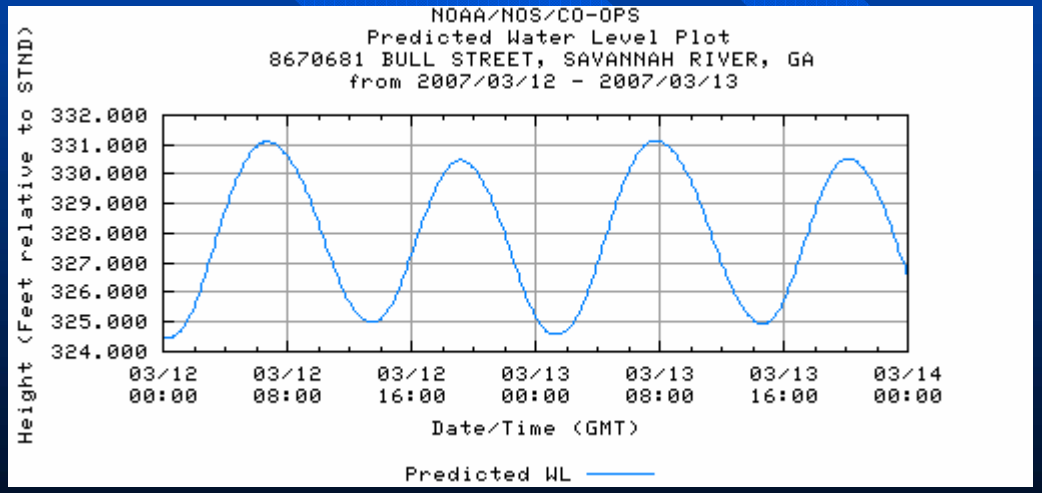
Leadline *Single Beam* *Multibeam*





Tidal / Ocean Current etc

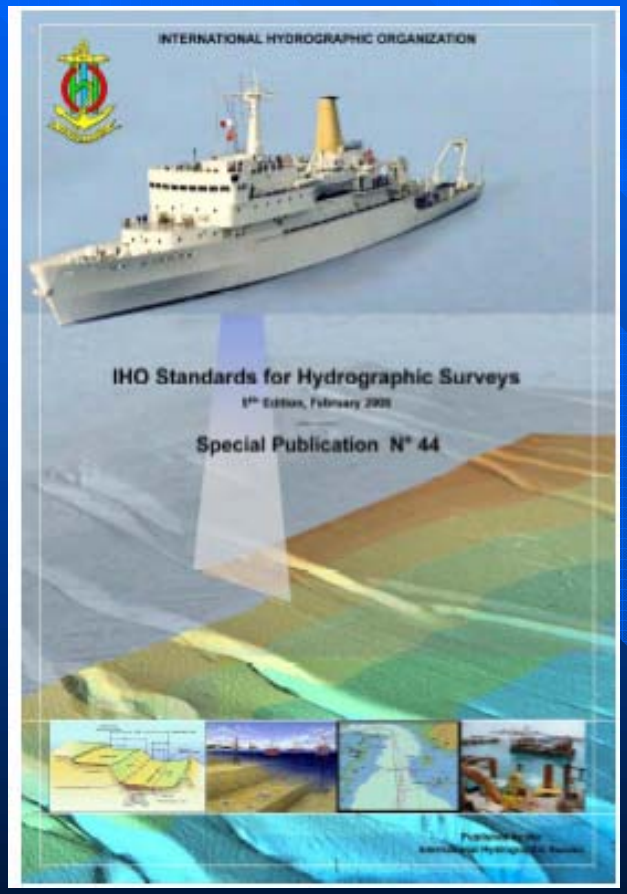




IHO STANDARDS

S-44

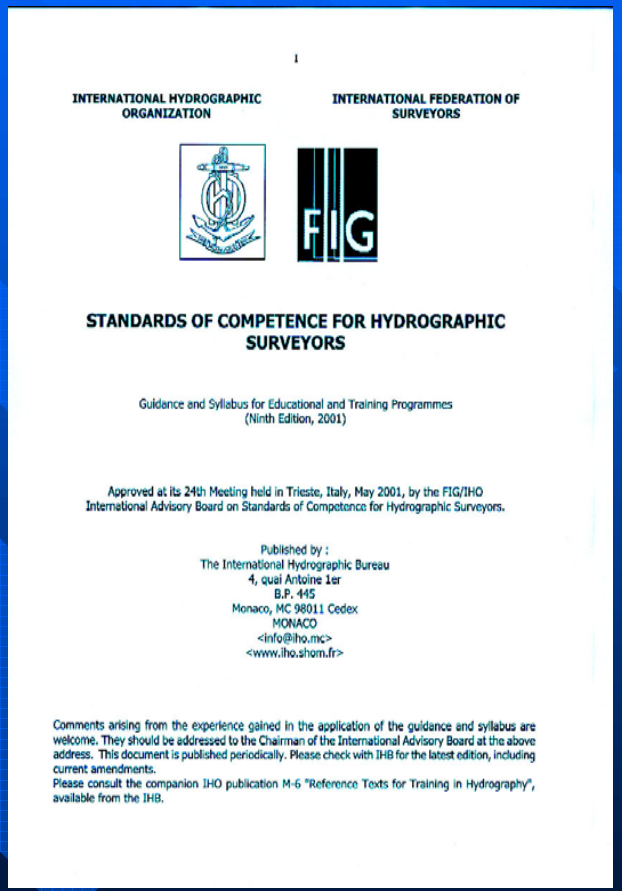
Standards for Hydrographic Surveys



S-44 WG

M-5

Standards for Hydrographic Surveyors



1

INTERNATIONAL HYDROGRAPHIC ORGANIZATION

INTERNATIONAL FEDERATION OF SURVEYORS

FIG

STANDARDS OF COMPETENCE FOR HYDROGRAPHIC SURVEYORS

Guidance and Syllabus for Educational and Training Programmes
(Ninth Edition, 2001)

Approved at its 24th Meeting held in Trieste, Italy, May 2001, by the FIG/IHO International Advisory Board on Standards of Competence for Hydrographic Surveyors.

Published by :
The International Hydrographic Bureau
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<info@iho.mc>
<www.iho.shom.fr>

Comments arising from the experience gained in the application of the guidance and syllabus are welcome. They should be addressed to the Chairman of the International Advisory Board at the above address. This document is published periodically. Please check with IHB for the latest edition, including current amendments.
Please consult the companion IHO publication M-6 "Reference Texts for Training in Hydrography", available from the IHB.

FIG/IHO/ICA Advisory Board

IHO STANDARDS

- **S-44** **5th Ed – Feb 08**

  Sets out the standards required for the execution of hydrographic surveys for the collection of data primarily intended for the compilation of navigational charts to be used for the safety of surface navigation and the protection of the marine environment.

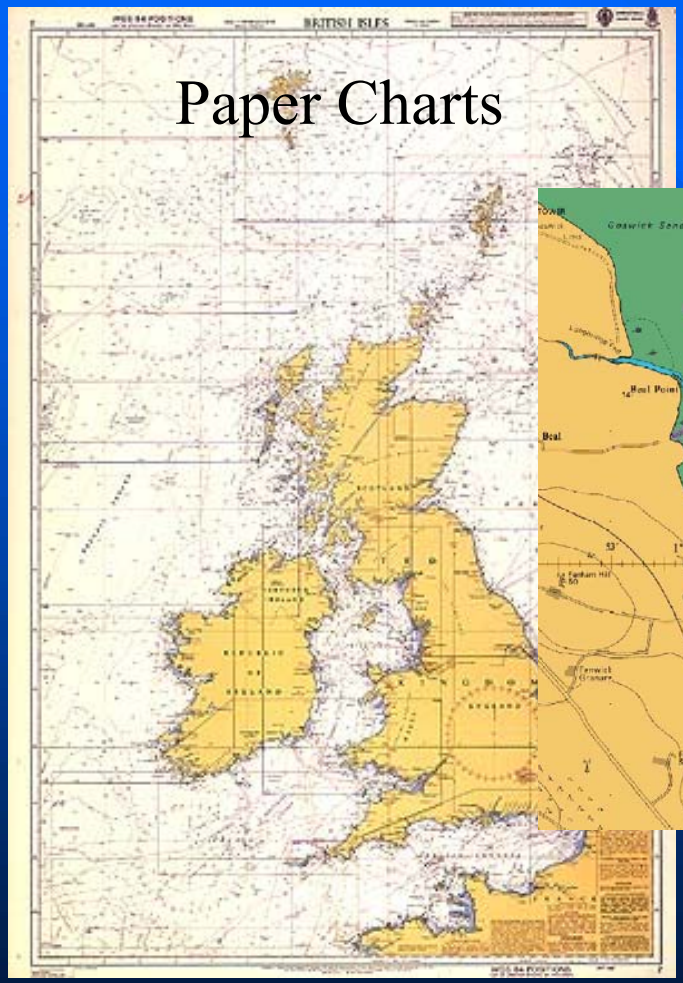
- **M-5** **9th Ed - 2007**

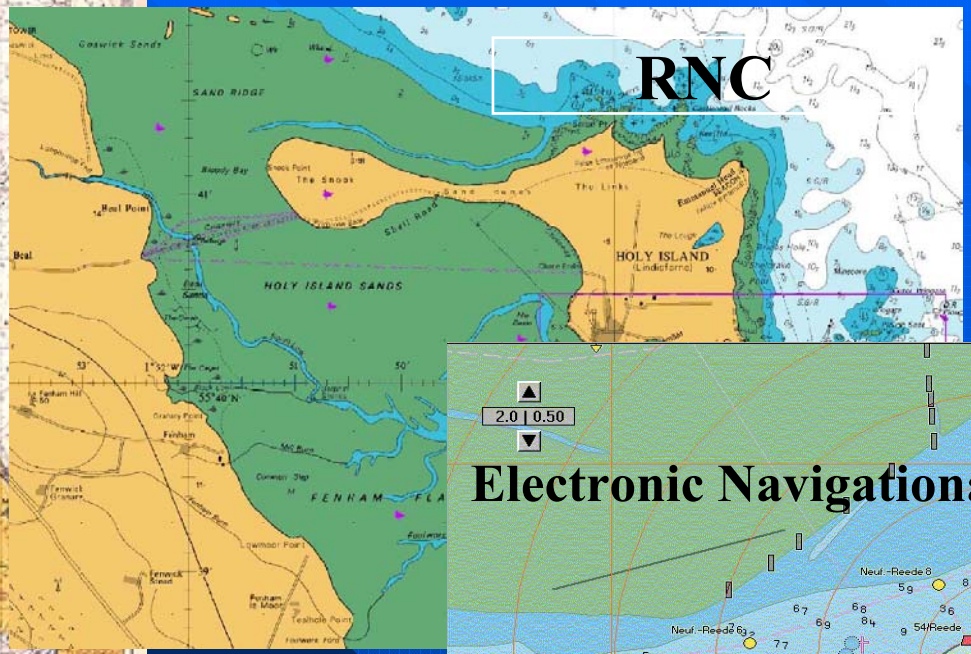
  Gives the minimum standards for international recognition of programmes of hydrographic training at two levels, Category A or B. Outlines procedures for submission of documentation, and provides a complete model syllabus.

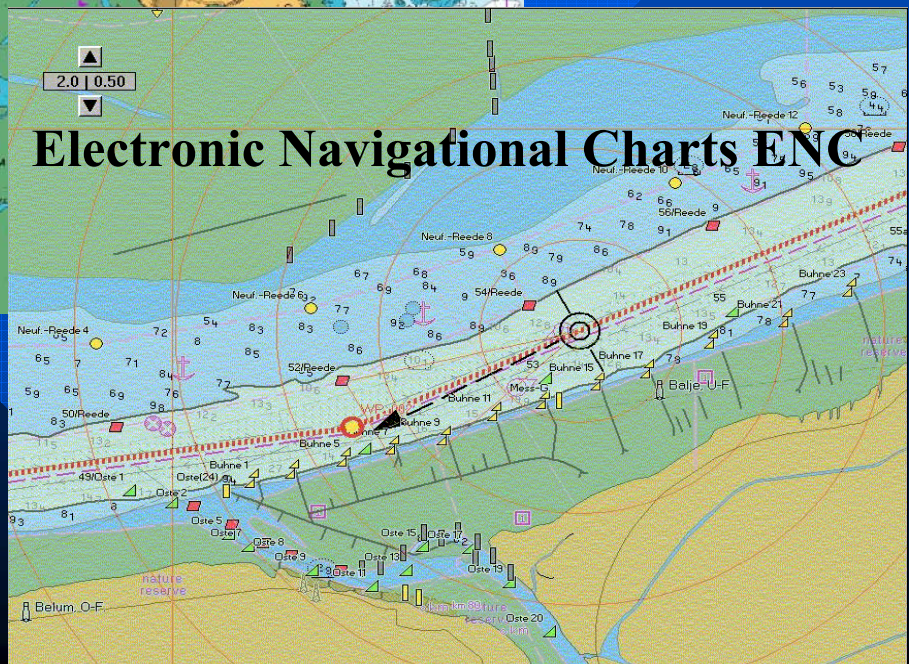
Products and Services

Products/Services – Navigational Charts

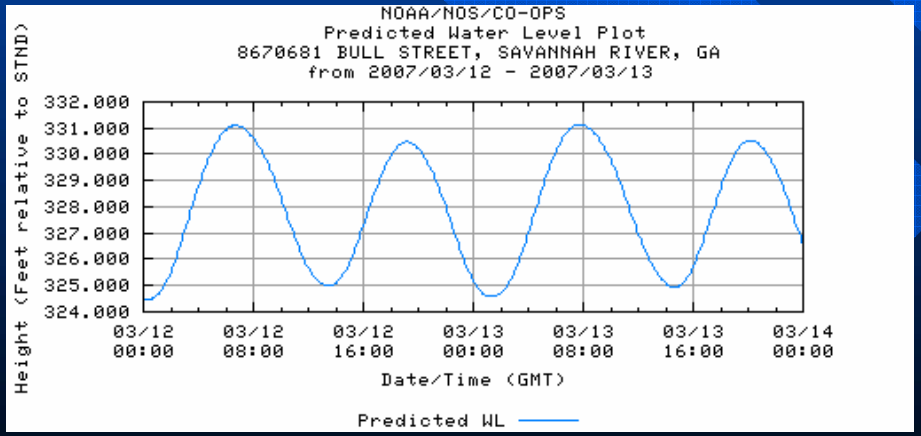
Update Service





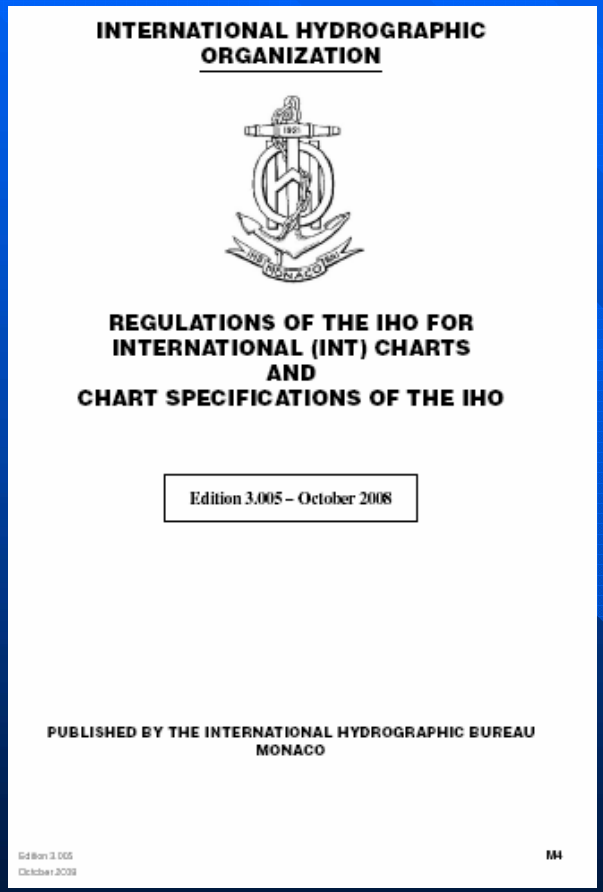


Products/Services – Nautical Publications



IHO STANDARDS

M-4
Chart Specifications



INTERNATIONAL HYDROGRAPHIC ORGANIZATION

REGULATIONS OF THE IHO FOR INTERNATIONAL (INT) CHARTS AND CHART SPECIFICATIONS OF THE IHO

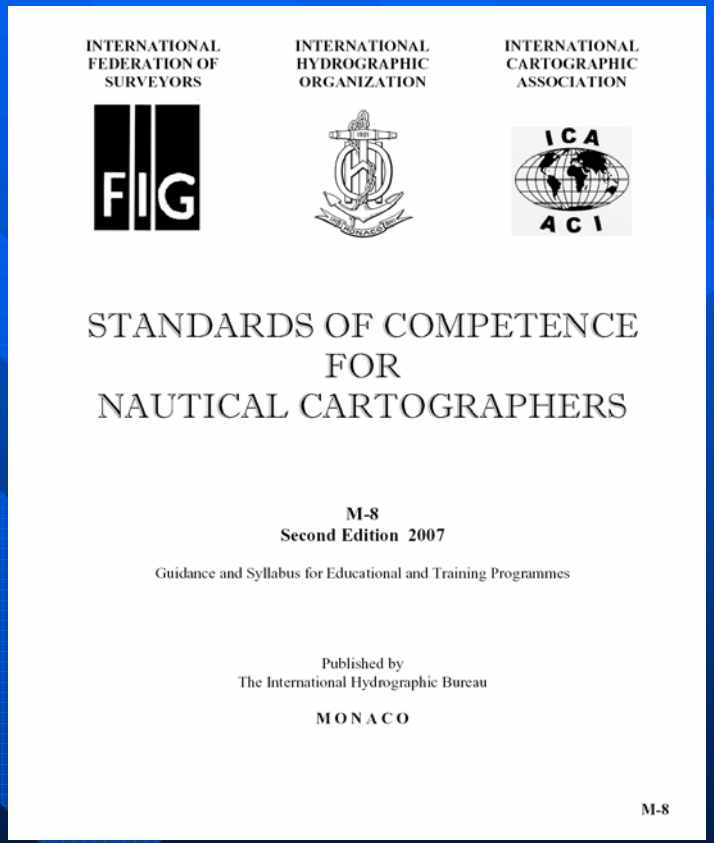
Edition 3.005 – October 2008

PUBLISHED BY THE INTERNATIONAL HYDROGRAPHIC BUREAU MONACO

M4

CSPCWG

M-8
Standards for Nautical Cartographers



INTERNATIONAL FEDERATION OF SURVEYORS

INTERNATIONAL HYDROGRAPHIC ORGANIZATION

INTERNATIONAL CARTOGRAPHIC ASSOCIATION

STANDARDS OF COMPETENCE FOR NAUTICAL CARTOGRAPHERS

M-8
Second Edition 2007

Guidance and Syllabus for Educational and Training Programmes

Published by
The International Hydrographic Bureau

MONACO

M-8

FIG/IHO/ICA Advisory Board

IHO STANDARDS

- **M-4** **Ed 2.005 - Oct 08**

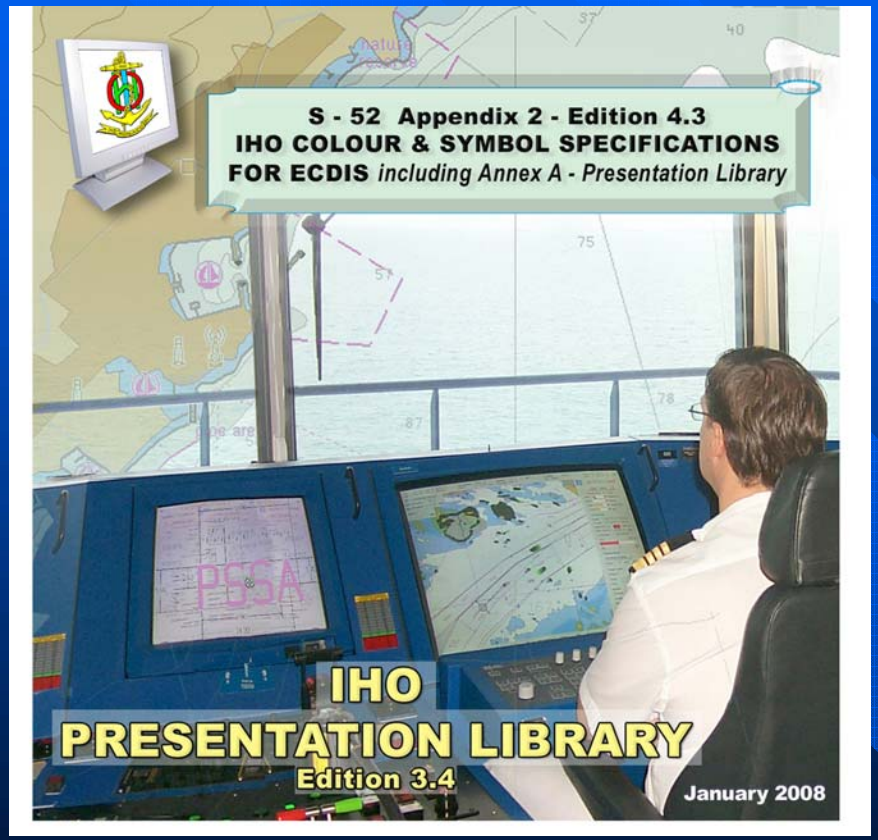
  Gives chart specifications of the IHO for compiling nautical charts, together with agreed symbols and abbreviations adopted for general use by Member States. (supplemented by INT 1, INT 2 and INT 3)

- **M-8** **2nd Ed - 2007**

  Provides guidance whereby individual cartographers may be trained and qualified in accordance with internationally accepted levels of competence. The Standards indicate the minimum degree of knowledge and experience considered necessary for nautical cartographers, and provide a set of programme outlines against which the FIG/IHO/ICA International Advisory Board on Standards of Competence may evaluate programmes submitted for recognition.

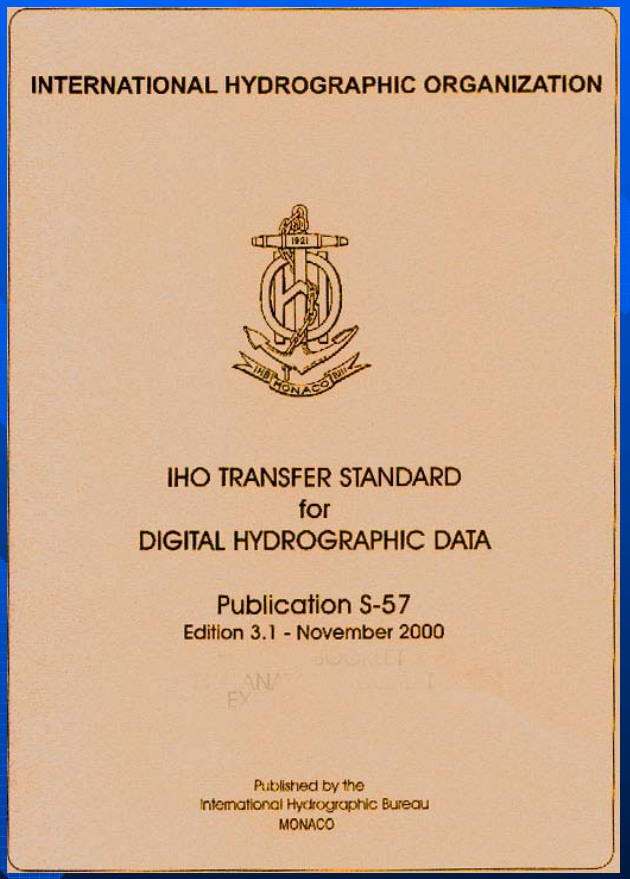
IHO STANDARDS

S-52
Specifications for ECDIS Content & Portrayal



CSMWG

S-57
IHO Transfer Standard for Hydrographic Data



TSMAD

IHO STANDARDS

- **S-52** **Ed 3.4 – Jan 08**

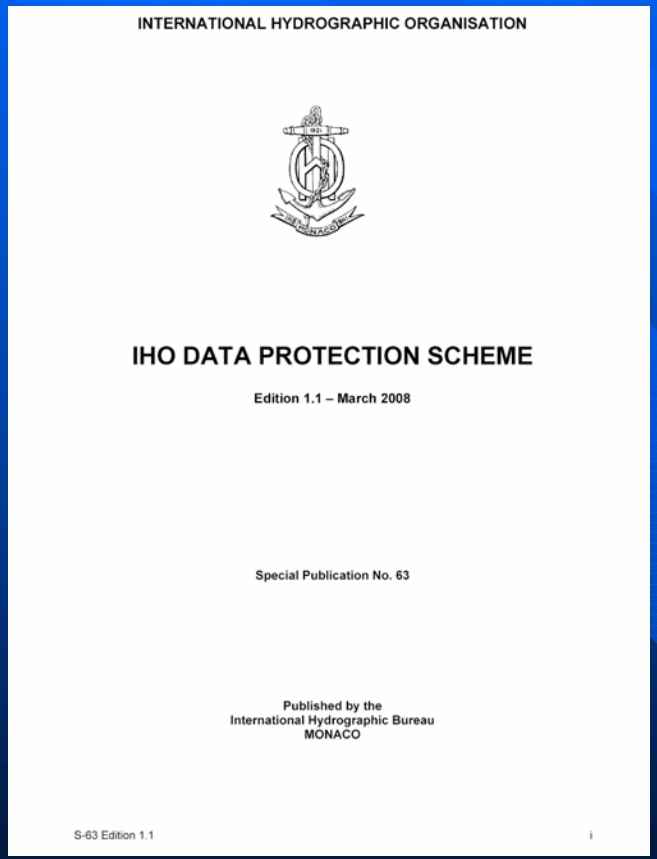
  Provides specifications and guidance regarding the issuing of Electronic Navigational Charts (ENC), their display in an ECDIS and their updating. S-52 was developed in conjunction with the IMO Performance Standards for ECDIS. Includes the ECDIS Presentation Library which provides details and procedures for implementing the display specifications contained in S-52 Appendix 2, by decoding and symbolizing the elements of the SENC.

- **S-57** **Ed 3.1.1 - Jan 07**

  Provides for the coding and exchange of hydrographic digital data, including that intended for ECDIS purposes. Includes an ENC Product Specification, i.e. a set of rules to be followed when developing ENCs.

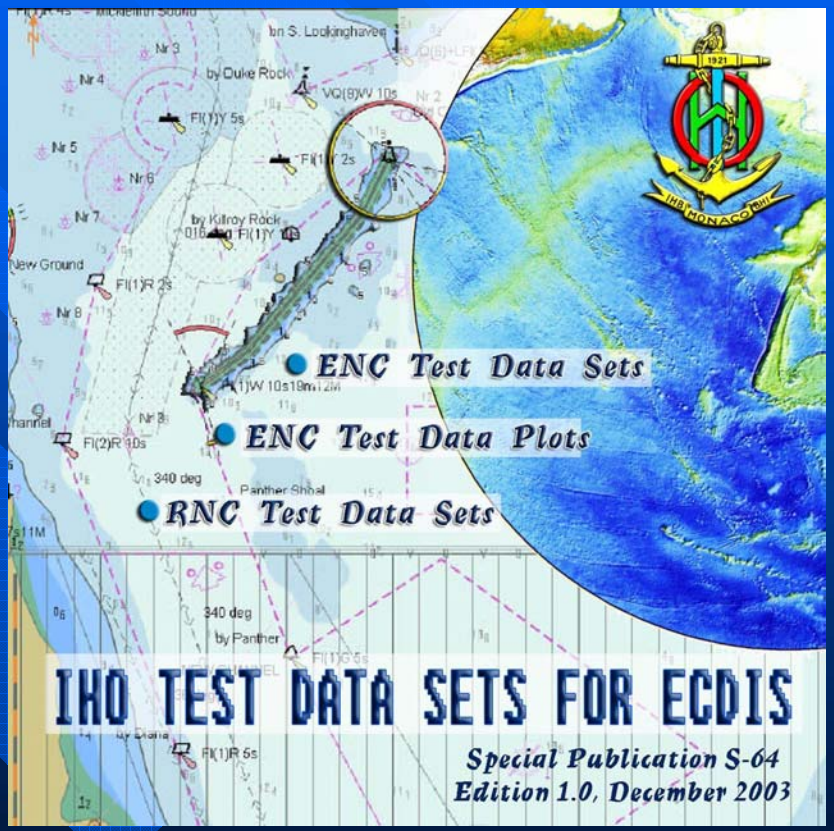
IHO STANDARDS

S-63
IHO Data Protection Scheme



DPSWG

S-64
IHO Test Data Sets for ECDIS



DPSWG / CSMWG / TSMAD

IHO STANDARDS

- **S-63** **Ed 1.1 – Mar 08**

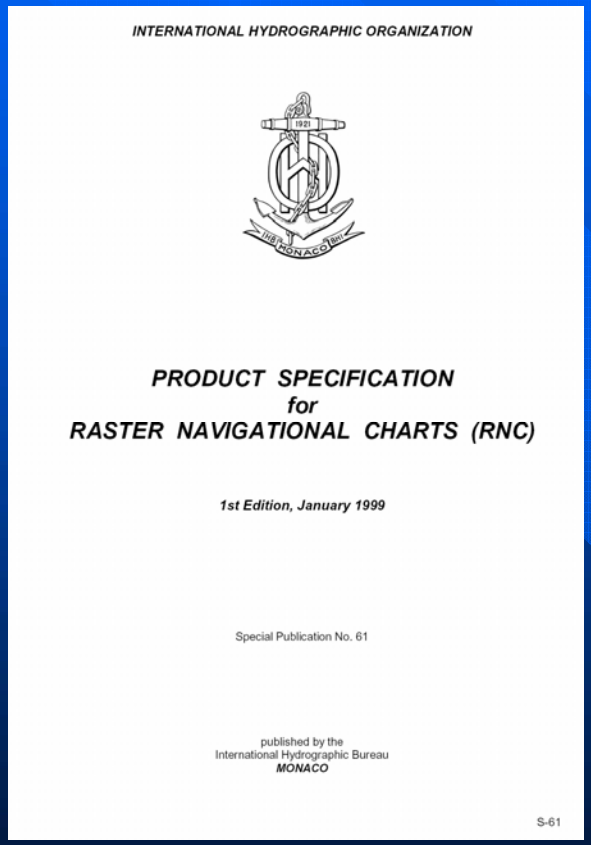
  Describes the IHO ENC security scheme, as well as test data. It is intended for use by all those ECDIS manufacturers and data distributors participating in an ENC service with data encrypted.

- **S-64** **Ed 1.1 – Nov 08**

  Contains the IHO Test Data Sets (TDS) for ECDIS, to be used in conjunction with the IEC Standard 61174 for testing/type approval purposes. It includes ENC TDS and the associated ECDIS graphic plots; and RNC TDS.

IHO STANDARDS

S-61
Product Specifications for RNCs



INTERNATIONAL HYDROGRAPHIC ORGANIZATION

PRODUCT SPECIFICATION
for
RASTER NAVIGATIONAL CHARTS (RNC)

1st Edition, January 1999

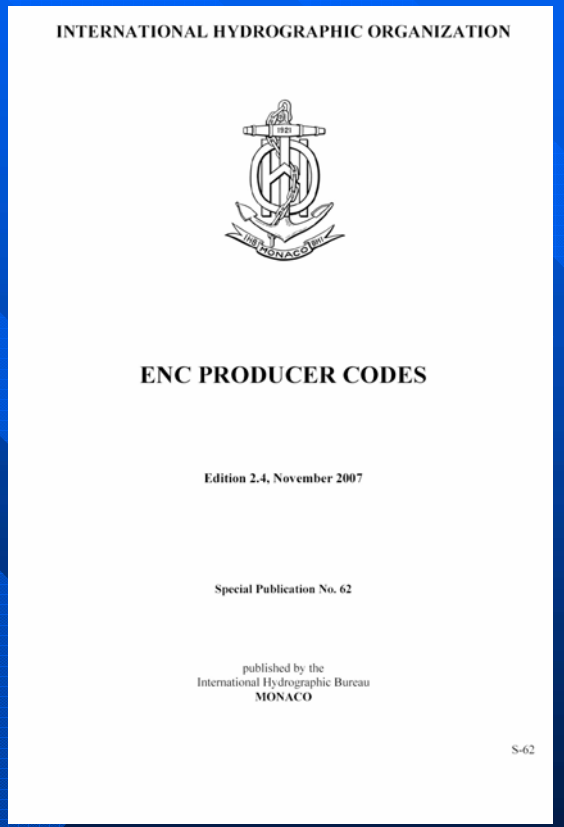
Special Publication No. 61

published by the
International Hydrographic Bureau
MONACO

S-61

TSMAD

S-62
ENC Producer Codes



INTERNATIONAL HYDROGRAPHIC ORGANIZATION

ENC PRODUCER CODES

Edition 2.4, November 2007

Special Publication No. 62

published by the
International Hydrographic Bureau
MONACO

S-62

IHB

IHO STANDARDS

- **S-61** **1st Ed – Jan 99**

  Defines the minimum requirements that a Raster Navigational Chart (RNC) must have to fulfill the requirements of the Raster Chart Display System (RCDS) Mode of Operation, as described in the IMO Performance Standards for ECDIS.

- **S-62** **Ed 2.4 – Nov 07**

  consists of a maintained list of ENC producer codes.

IHO STANDARDS : THE FUTURE

S-100
IHO Geospatial Standard for Hydrographic Data

TSMAD

S-101
ENC Product Specification

TSMAD

IHO STANDARDS : THE FUTURE

- **S-100** **Ver 0.0.0 – Jan 08**

  Will support a greater variety of hydrographic-related digital data sources, products, and customers. This includes imagery and gridded data, and new applications that go beyond the scope of traditional hydrography (for example, high-density bathymetry, seafloor classification, marine GIS, etc.). It will also support the use of Web-based services for acquiring, processing, analyzing, accessing, and presenting data.

- **S-101**

  ENC Product Specification, based on S-100. Will contain a set of rules to be followed when developing ENCs.

Standards – Some Key Differences between S-57 and S-100

S-57 effectively only supports one product specification and has an inflexible maintenance regime (required the freezing of standards).

S-100 supports different types of applications and make provision for multiple Product Specifications – Product Specifications will accommodate independent update cycles.

S-57 does not make provision for data types other than vector.

S-100 does make provision for imagery and gridded data types.

S-57 limited to a single encapsulation format (data model is embedded in encapsulation). (i.e. data content tied up with the data carrier mechanism).

S-100 separates the data content from the data carrier and makes provision for the use of multiple encapsulation formats e.g. ISO 8211, GLM, KML others .. .

Distribution

Distribution – Navigational Products

Paper Charts , RNCs and Nautical Publications

ENCs

RENCs

VARs

Distributor

Distributor

Distributor

Distribution – Navigational Products

No IHO Standards, as the IHO does not regulate the distribution of charts and other navigational products.

However, some policies related to data distribution in M-3, e.g. SENC distribution.

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.

Policies

Policies – Publications containing IHO Policies

- M-2 *National Maritime Policies and Hydrographic Services*
- **M-3 *Resolutions of the IHO***
- M-4 Part A *Regulations for INT Charts*
- M-11 Part A *Guidance for the Preparation and Maintenance of INT Chart Schemes*
- M-13 *Manual of Hydrography*
- S-32 *Hydrographic Dictionary*
- S-65 *Guidance for ENC Production*

M-3 Chapter A, Section 6 (Tides)

A 6.7 **COLLECTION AND PUBLICATION OF TIDAL DATA**

1. *It is recommended that Member States gather tidal data from as many locations as feasible and maintain sets of harmonic constants in National Tidal Constituent Data Banks.*

2. *It is recommended that Member States make public, using their WEB site or other suitable means, a list of locations included in their own Tidal Constituent Data Banks.*

Thank You