IHO CHARTING RESOLUTIONS AND SPECIFICATIONS

Submitted by Secretariat

SUMMARY

Executive Summary: This document describes briefly the IHO Resolutions and Charting Specifications relevant to the TWCWG and on which the TWCWG is the subject matter expert.

Action to be taken: Paragraph 4

Related documents: IHO Publication M-3 (*Resolutions of the IHO*) dated March 2020, IHO Publication S-4 Edition 4.8.0 (*Regulations for International (INT) Charts and Chart Specifications of the IHO*) dated November 2018

1. Introduction

1.1 The International Hydrographic Organization is an intergovernmental consultative and technical organization that works to ensure all the world's seas, oceans and navigable waters are surveyed and charted. It issues survey best practices, provides guidelines to maximize the use of hydrographic survey data and develops hydrographic capabilities in Member States.

1.2 The IHO has a number of publications which provide guidance and set minimum standards on a wide variety of hydrographic and cartographic topics. The three primary publications covering operational aspects of the IHO activities are M-3 - *Resolutions of the IHO*, S-44 – *Standards for Hydrographic Surveys*, and S-4 - *Regulations for International (INT) Charts and Chart Specifications of the IHO*. M-3 articulates the overarching guiding principles of the IHO Member States, whilst S-44 and S-4 articulate the minimum standards to be met for hydrographic surveys undertaken for the safety of navigation and protection of the marine environment, and an internationally-agreed product specification for nautical charts respectively.

2. Resolutions of the IHO

2.1 There are a number resolutions which are of direct relevance to the measuring of water levels and water flows. These have been under review since TWCWG4 by a small group led by Hydro SAN, the results of this review will be presented during TWCWG5.

2.2 There are two relevant charting resolutions:

i. Resolution 1/2008 - *Naming Convention for the Vertical Datum of Charts*; and
ii. Resolution 3/1947 - *Soundings Taken from Foreign Charts*, see Annex A.

2.3 The Chart Standardization and Paper Chart Working Group (CSPCWG), now the Nautical Cartography Working Group (NCWG) made the following observations with regards to resolution 1/2008:

i. There is no exact equivalent of this resolution in S-4;
ii. The UKHO's former Head of Tides and IHO Tidal Committee chairman (John Page) advised not to include the contents within S-4;
iii. The information is chart metadata and not relevant for the chart user, further, it is a technical issue of how producer HOs decide to record this information in their charts' database and records;
iv. It does not seem appropriate to include this information within the 'Charts' section of M-3 nor in S-4, therefore it may be better in M-3 section 2.2 'Tides and Water levels'? and
v. Advice and guidance was requested from TWLWG.

This resolution is amongst those being reviewed by the Hydro SAN led group.

2.4 The Chart Standardization and Paper Chart Working Group (CSPCWG), now the Nautical Cartography Working Group (NCWG) made the following observations with regards to resolution 3/1947:

i. Although there is no exact equivalent of this in S-4, it does state:

> B-405.3 Where the tidal range is appreciable, the Lowest Astronomical Tide (LAT), or as closely equivalent to this level as is practically acceptable to Hydrographic Offices, should be adopted as CD. Alternatively, the differences between LAT and national CD may be specified on nautical documents. If low water levels in a specific area frequently deviate from LAT, CD may be adapted accordingly. Since LAT is the recommended CD with worldwide application, and has the additional merit of removing all negative values from tide tables, this should be adopted as a long term objective, and be considered when opportunity for change arises.
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> And in the title notes section:
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> B-241.5 Unit of measure for depths with a general statement about the vertical chart datum used (see B-405).

ii. It was considered the only possible outstanding matter may be: 'a note shall be given in the title of the chart stating the datum for sounding reduction used for each constituent area'. This was considered a very rare requirement, however conceivably it could occur. Usually the words 'approximately LAT' (or equivalent) cover slight disparities in CD where different nations' charts have been used in a small scale derived chart; and

iii. It was recommended that this Resolution may be considered time expired and cancelled, however advice and confirmation of this recommendation was requested from TWLWG.

It is proposed that the CSPCWG comments are considered in relation to a review of B-405.

3. Regulations for International (INT) Charts and Chart Specifications of the IHO

3.1 When S-4 Part B was originally prepared, the term 'charts' actually referred to paper, sometimes called analogue, charts; digital, sometimes called electronic, charts were yet to become a viable reality. (See B-103.4 for more detailed definitions of different types of digital charts). The subsequent development of digital charts presented additional Specification requirements, which were met by the development of S-52 and the Electronic Navigational Chart (ENC) Product Specification within S-57 for vector charts, and S-61 for raster charts. Both S-52 and S-57 make full use of the background information already contained in S-4 Part B and include cross-references where appropriate. Similarly, adjustments have been made to S-4 Part B, to reflect better the existence and content of digital (vector) charts.

3.2 The TWCWG completed its review and revision of resolution 3/1919, as amended - *Datums and Bench Marks* - in 2017 and developed the new resolution 1/2019 - *Digital Tide and Tidal Current Tables*, which was adopted via IHO Circular Letter 04/2020 dated 17 January 2020. These two resolutions contain a great detail of information relevant to the charting specifications contained in S-4; it recommended that these are used as a basis on which the work should be undertaken.

3.3 The relevant S-4 standards are included in the annexes B to I. It should be noted that there is much cross reference between the various standards as well as with relevant resolutions, therefore any review should take into consideration all items and in particular the currency of the material being considered. It is entirely possible that a reference has been amended more recently than the related standard.

4. Action

4.1 The TWCWG is invited to:

a. **note** the information provided;
b. **consider** the comments by CSPSWG relating to the IHO resolutions;
c. **undertake** a review of the S-4 standards with cross reference to the relevant IHO resolutions;
d. **propose** revision or deletion action, as appropriate, to NCWG; and
e. **take** any other action as appropriate.

Annexes:

A. Resolution 3/1947 - *Soundings Taken from Foreign Charts*
B. B-131 Geographical Positions
C. B-302 Plane of Reference for Heights
D. B-380 Overhead Obstructions and Clearances: Bridges, Cables, Pipes
E. B-405 Chart Datum
F. B-406 Tidal Levels
G. B-407 Tidal Streams
H. B-408 Currents (Non-Tidal)
I. B-496 Tidal and Water Level Indicator Signals

Resolution 3/1947 - *Soundings Taken from Foreign Charts*

It is resolved that, when soundings taken from original foreign charts are accepted unchanged, a note shall be given in the title of the chart stating the datum for sounding reduction used for each constituent area; alternatively the information may be conveyed in the table of tidal information on the chart.