



IHB File No. S3/1401/WG

CIRCULAR LETTER 34/2005
24 March 2005

IHO TECHNICAL RESOLUTIONS A 2.5 AND G 2.1

Reference: CL 80/2004 dated 30 November 2004

Dear Hydrographer,

The IHB would like to thank the following 41 Member States who replied to CL80/2004: Algeria, Argentina, Australia, Bahrain, Belgium, Brazil, Canada, Chile, Colombia, Croatia, Cyprus, Ecuador, Estonia, Finland, France, Greece, Guatemala, Iceland, India, Italy, Japan, Kuwait, Mexico, Mozambique, Netherlands, New Zealand, Norway, Oman, Peru, Philippines, Portugal, Russian Federation, Serbia and Montenegro, Slovenia, South Africa, Spain, Sweden, Tunisia, Turkey, United Kingdom and United States of America. The comments made by MS are shown at Annex A.

At the date of the Circular Letter there were 74 Member States with 3 suspended and therefore in accordance with paragraph 6 of Article VI of the Convention the majority required for adoption is 36. There were 38 replies approving the adoption of TR A 2.5 with 3 voting against (Canada, Japan and Peru) and TR A2.5 has therefore been adopted.

The comments made by Algeria and France relating to the French text improve the clarity and alignment with the English text and have been included. The proposal by Algeria to include further clarification of “neighbourhood” at the end of paragraph 3 has been included in all 3 languages and following further discussion with France the translation of “neighbourhood” has been changed from “voisinage” to “à proximité”. Additionally following discussions with France the proposal to change “regional” to “particular” in note ii to paragraph 2 has not been included but in the French text “régionaux” has been changed to “locales”.

The proposals by Chile to change the word “feasible” to “possible” in the last sentence of note i to paragraph 2 of the English text and to amend paragraph 4, which simplifies the wording without changing the meaning, have been included.

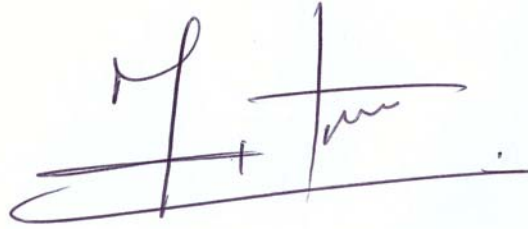
As raised by Australia, Portugal and the United Kingdom there are conflicting uses of the words height and elevation. The Hydrographic Dictionary (S-32) defines “**height**” as being “*The vertical distance of a level, a point or an object considered as a point, measured from a specified datum*”, and also as “*The vertical dimension of an object*”. S-32 defines “**elevation**” as “*The vertical distance of a level, on or affixed to the surface of the Earth measured from Mean Sea Level. The term elevation is sometimes used synonymously with Altitude which in modern use refers particularly to the distance of points or Objects above the Earth’s surface, and also as an area higher than its surroundings, as a hill*”. Consultation of several English language dictionaries show that “**height**” and “**elevation**” are considered to be synonymous and are both defined as “*above a given level*” or “*above the level of the sea*”. In the French version of S-32 *elevation* is translated as *altitude*, which is defined as the “*vertical distance between the level of a point and a **reference level***”. In Spanish the definition is similar to the English although Mexico reports that replacing *height* with *elevation* does not affect the meaning. It is only the English and Spanish definitions in S-32 that refer specifically to MSL

Part of the deliberations within the Tidal Committee during its review of TR A 2.5 was to bring it into agreement with the Chart Specifications of the IHO (M-4) where, for instance, the diagram in Section

405 shows *charted elevation* and *charted vertical clearance* as being above HW datum or MSL. The IHB believes that the revised wording for paragraph 1 proposed by the UK improves the clarity of the text and has therefore been included in the final text of TR A2.5 which is attached as Annex B. The revised text will be included in IHO Publication M-3. In the longer term the IHB will undertake a review of the use of the two words “height” and “elevation” across all IHO publications.

All 41 replies approved the adoption of the modified TR G 2.1 with 3 MS providing supportive comments. The revised text will be incorporated into IHO Publication M-3.

On behalf of the Directing Committee
Yours sincerely,

A handwritten signature in dark ink, appearing to be 'A. Maratos', written over a light blue horizontal line.

Vice Admiral Alexandros MARATOS
President

Annex A: Comments from MS
Annex B: TR A2.5

TR A 2.5

Algeria

1. So as to unify the French and English texts and for a better understanding, the French text in paragraph “2a” could be written as follows: “ Il est décidé que le niveau de référence pour les prédictions des marées sera le même que le niveau de référence pour les sondes portées sur les cartes marines....”

2. In paragraph 2bi (French text only) delete: an error in the repetition of the word “que” and delete the “s” of années.

3. So as to unify the French and English texts and for a better understanding, the French text in paragraph “3” could be written as follows: “ Il est décidé que les niveaux de référence pour les sondes portées sur les cartes marines, les niveaux de référence pour les prédictions des marées et autres niveaux de référence pour les marées seront rapportées au niveau employé pour le nivellement général dans le pays considéré... »

4. In our opinion at the end of paragraph 3, there is a slight problem in comprehension; it would be preferable to stipulate (in English and French) which neighbourhood is being referred to (tide gauge, tidal station, tidal observatory or other...)

Australia

The inconsistent use of the words elevation, height and vertical length needs resolution. Also vertical datum should definitely be WGS84.

Canada

Paragraphs 1- accept, 2a- accept, 2b – not supported, 3 – not supported, 4 – Accept

Colombia

It is important and necessary that both the Tidal Committee and the Capacity Building Committee develop regional workshops and/or technical visits to the Member States requiring it, to assist and help in meeting the requirements of TR A2.5.

Chile

In paragraph 2. i) the sentence “the tide levels should, if feasible...reflect...” must read “The tide levels should, if possible, reflect...” We suggest the following new text for paragraph 4. *It is resolved that ellipsoidal height determinations of the vertical reference marks used should be made...*

Ecuador

It is a support for heights determination of ellipsoidal surface, in addition; using the same prediction datum for the charts design shall avoid estimate errors.

Finland

Finnish coastline is typically non-tidal waters. Vertical clearances have been calculated from MW datum on charts of the coastline areas (but HW on charts of inland lake areas). Therefore Finland will reserve a certain period of time for necessary preparations to fulfil the new requirements of the amendments to TR A2.5.

France

It is necessary to correct the French version of resolution A 2.5 to read:

Note ii of paragraph 2:

ii) In non-tidal waters, in order to allow the development of regional solutions, it is recommended that a range of low/high water definitions of the lower/upper 94-100 percentile be adopted.

The French version of the above, the adjective “regional” in the English version has been translated by the word “particulier”, as the point of the accuracy of the word regional does not appear precise therefore we suggest that “regional” becomes “particular” in the English version.

Paragraph 4

In order to maintain the set of data transposed on the different vertical references used, it is decided that the ellipsoidal list of the marked vertical references used for tidal observations be included on a geocentric reference system, preferably the “World Geodetic System 1984” (WGS 84).

Japan

It is clearly mentioned that heights on shore, including those of lights, shall be referred to mean sea level in the resolutions of the IHO and that vertical clearance is generally given between high water and the lowest part of the bridge structure in the chart specifications of the IHO (M-4). The relation between the height on shore and vertical clearance is not clear in the amended text, so that some confusion might be caused. As for A2.5-2 Note (ii), I query whether 94 – 100% is reasonable without information of the sea level movement in non-tidal waters. Finally I don't see the need to make the amendment of TR A 2.5.

Mexico

In Spanish, replacing the word “height” by “elevation” does not affect the meaning of the word, provided that the type of height or elevation used is specified. For example, ellipsoidal height or height above the mean sea level.

It is convenient to clarify that the LAT value be as accurate as possible, as an error margin according to the technical possibilities of each country is allowed. Likewise, it is important to mention that in Mexico is used the MLLW for the charts' datum.

The same is applied to the previous paragraph for the case “water without tides” (“dead tides”), increasing in this way the safety margin.

Peru

The Directorate of Hydrography and Navigation of the Peruvian Navy considers that in item (a) the text in red must not be included, because one of the aims at international level is to make uniform the datum to be used in the charts. Likewise, it is considered convenient to include in this paragraph the word gradually, in the following way “...the Lowest Astronomical Tide (LAT), to be adopted *gradually* as chart datum where tides have an appreciable effect on water level.”

Portugal

We agree with the proposed changes. However, we may stress that height and elevation terms may be consistent with the definitions in the Hydrographic Dictionary (S-32). CHRIS is also studying this issue, as part of the integration of ECDIS glossary into S-32.

Russian Federation

2a. In the Russian tide tables and on charts the same datum is used for tide predictions and sounding reduction – Lowest Astronomical Tide (LAT), therefore we fully agree with this paragraph.

2b. In the Russian tide tables the Highest Astronomical Tide (HAT) is stated for all major ports, therefore, it is no problem to specify it on nautical charts.

2bi. It is proved by practice that for freezing seas the lowest (LAT) and highest (HAT) tide levels should be calculated using harmonic constants derived from observations during the period of navigation (June – September), as the ice distorts the results of observations (decreases the tide range, changes angles of wave position). For non-freezing seas the extreme levels should be calculated as proposed in the IHO CL.

3. It is necessary that the lowest (LAT) tide level be connected with the general land survey datum and with prominent fixed marks in the neighbourhood. However, not all points of the Russian North and Far East seas have such referencing now. Therefore, the solution of this problem will require time and appropriate expenditures.

4. It is possible that tide reference marks be related to the single geocentric reference system - World Geodetic System 1984 (WGS-84). It is not possible to determine the exact period of time required for this.

United Kingdom

UK recommends that paragraph 1 should be amended to read: “It is resolved that heights on shore, including elevations of lights, should be referred to a *HW datum* or Mean Sea Level (*MSL*). *The datum used should be clearly stated on all charts.*” As many charts and navigational publications use the

word “height” to describe the elevation of features (other than lights) above the plane of reference, including for example, spot heights.

TR G 2.1

Australia

Spanish is one of the fastest growing languages in the world today.

Ecuador

The recommendation is valid; the translation of division or column headings will facilitate their identification into tide charts.

Mexico

It is convenient to use the Spanish language, as in the American continent most of the countries speak this language and this makes easier the handling of the Tide Tables.

A 2.5 DATUMS AND BENCH MARKS

1.- It is resolved that heights on shore, including elevations of lights, should be referred to a HW datum or Mean Sea Level (MSL). The datum used should be clearly stated on all charts.

2.- a) It is resolved that the datum for tide predictions shall be the same as chart datum (datum for sounding reduction). It is further resolved that the Lowest Astronomical Tide (LAT), or as closely equivalent to this level as is practically acceptable to Hydrographic Offices, be adopted as chart datum where tides have an appreciable effect on the water level. Alternatively the differences between LAT and national chart datums may be specified on nautical documents. If low water levels in a specific area frequently deviate from LAT, chart datum may be adapted accordingly.

b) It is resolved that Highest Astronomical Tide (HAT) be adopted as the datum for vertical clearances where tides have an appreciable effect on the water level. Alternatively the differences between HAT and national datums for vertical clearances may be specified on nautical documents. If high water levels in a specific area frequently deviate from HAT, the datum for vertical clearances may be adapted accordingly. It is further resolved that a HW datum be used for vertical clearances in non-tidal waters.

Notes:

i) LAT (HAT) is defined as the lowest (highest) tide level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions. It is recommended that LAT and HAT be calculated either over a minimum period of 19 years using harmonic constants derived from a minimum of one year's observations or by other proven methods known to give reliable results. Tide levels should, if possible, reflect the estimated error values obtained during the determination of these levels.

ii) In non-tidal waters, in order to allow the development of regional solutions, it is recommended that a range of low/high water definitions of the lower/upper 94-100 percentile be adopted.

3.- It is resolved that chart datums (datums for sounding reduction), the datums of tide prediction and other tidal datums shall always be connected with the general land survey datum, and, in addition, with a prominent and permanent fixed mark in the neighbourhood of the tide gauge, station, observatory etc.

4.- It is resolved that ellipsoidal height determinations of the vertical reference marks used for tidal observations should be made, in order to support the production of seamless data sets; i.e. to allow the translation between data sets with differing vertical datums. It is further resolved that such observations should relate to a geocentric reference system, preferably the World Geodetic System 1984 (WGS84).