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CIRCULAR LETTER 19/2008
27 February 2008

REVIEW OF TECHNICAL RESOLUTIONS BY THE IHO TIDAL COMMITTEE

Reference: a) CL 98/2007 dated 5 November

Dear Hydrographer,

1 The IHB would like to thank the following 42 Member States who replied to the Reference: Algeria; Argentina; Australia; Bahrain; Belgium; Brazil; Canada; Chile; Colombia; Croatia; Cuba; Denmark; Ecuador; Finland; France; Germany; Greece; Iceland; Italy; Japan; Korea Rep of; Mexico; Morocco; Netherlands; New Zealand; Nigeria; Norway; Pakistan; Papua New Guinea; Peru; Portugal; Qatar; Russian Federation; Saudi Arabia; Slovenia; South Africa; Spain; Sweden; Tunisia; Turkey; UK; and the USA. With the exception of one vote against TR A2.16 all votes were in favour of the amended Technical Resolutions. Several Member States provided comments and these together with explanatory responses by the IHB are at Annex A.

2 New Zealand correctly pointed out that the small amendment made to the text of A2.9 where the words "to 1 decimal place" were added at the end of section 6 to bring the resolution in to agreement with M-4 B-407.1 had not been included on the voting paper. Considering the very minor nature of this amendment and the fact that the text of M-4 has already been approved by Member States the IHB intends to include this amendment in the revised text of A2.9.

3 In accordance with the IHO Convention Article VI paragraph 6, a simple majority of Member States is required to approve amendments to TRs. This is currently 39 Member States (50% of 78 [80 – 2 suspended]). The resolutions have therefore been approved. The final texts are at Annex B and these will be included in the IHO Repertory of Technical Resolutions (M-3) at the next opportunity.

On behalf of the Directing Committee
Yours sincerely,

Captain Robert WARD
Director

Annex A: Member States' comments
Annex B: Final text of resolutions.

Belgium:

A2.16: NO. Belgium believes that there should be a common definition of the Chart Datum in each Region (area of the Regional Hydrographic Commission). To leave the choice of the definition of the Chart Datum to each individual Member State will not lead to achieving the goal of a higher standardization in the use of Chart Data.

Comment by the IHB: The IHO has standardized the definition of Chart Datum for all Member States by adopting LAT (where tides have an appreciable effect on water level) as set out in TR A2.5 section 2a. Due to the wide variation in the tidal regime along coasts it is considered unlikely that an acceptable common realization of LAT, and hence Chart Datum, could be established within a Regional Hydrographic Commission Area. The Tidal Committee is only proposing here that the realization of Chart Datum adopted by any Member State should have a clearly defined name and that the State concerned should decide on that name and if / when the realization needs to be reviewed. There is nothing to prevent adjacent or regional States agreeing a common realization, and name, if this is acceptable to the States concerned.

Colombia:

A2.16: Yes, because with the TR A2.5 we only have the reference of the vertical datum, as chart datum, without knowing the exact date in which it has been established, as there is no clear way to record the changes in the chart datum level. With TR A2.16, it is recommended to implement with the system of the vertical datum, what is currently implemented with the horizontal datum, and it means to use a name taking into account the period or the year in which the chart datum is established or modified. In this way it is possible to compare data from different periods and to evaluate the changes.

A 2.5: Yes, because taking into account the changes made to this technical resolution, we consider that these are very important to be taken into account when doing any type of comparison between the vertical datums already established.

A 6.4: Yes, as the decision on when a change of the chart datum (CH) is necessary for a defined area and on the name to be assigned to this specific definition for CH, still depends on each Member State.

K 1.7: Yes

Cuba:

A2.16: Nautical charts comprising our master series are referred to LAT. We are complying with the contents established in TR A2.16 from 2007. Our annual Tide Tables have been calculated with respect to LAT including values for HAT.

A2.5: Even if we do not have large variations of sea level we apply the resolution A2.5

Ecuador:

A2.16: We propose to include the year in which the observation was used to obtain the harmonic constituents and the period in which the predictions were made. Example: Datum Posorja 1986 – 2006 (2004) – year of analysis.

Comment by the IHB: As set out in the resolution it is the view of the Tidal Committee that the exact name adopted is the responsibility of each Member State.

France:

A2.5: With the reservation that the last phrase of paragraph 4 should read "...geocentric reference system, preferably the International Terrestrial Reference System (ITRS) or one of its realizations e.g. the World Geodetic System 1984 (WGS84)." This proposal is made in accordance with a resolution of the IUGG, a copy of which is attached.

Comment by the IHB: The revised wording provided by France is technically correct and is in agreement with the wording being used in S-44 5th Edition. The draft resolution has been amended accordingly.

Japan:

We are agreeable but think that it is necessary to define the expression method and the description standard clearly.

Comment by the IHB: It was the view of the Tidal Committee (TC) that the datum used in any dataset should be clearly identifiable. However the TC considered, as set out in the resolution, that the exact name given and the decision as to when a new realization is required should remain a decision for each Member State.

Pakistan:

A note may be considered for addition, as guideline, to include a summary in tide tables or other relevant nautical document regarding length of observed data used along with its epoch, for determination of vertical datum.

Comment by the IHB: It is agreed that this information should be published but it is considered to be the responsibility of each MS to decide on where to do this.

Spain:

A2.16: We consider that this information must be shown in the memoire of the chart, in the tidal yearbook and in the documentation of the tidal station but not compulsory in own nautical chart.

A2.5: It is considered that paragraph 1 should be rewritten as the only things that have changed are in italics:

Comment by the IHB: There was an error in the Spanish text of A2.5 paragraph 1 and this has been corrected.

A2.16 NAMING CONVENTION FOR THE VERTICAL DATUM OF CHARTS

1. It is resolved that the vertical datum used on navigational charts, Chart Datum (CD), be defined without ambiguity in order to enable subsequent bathymetric data comparisons to be conducted in an efficient and reliable manner and for the accurate combination of datasets using different vertical datums.
2. It is recommended that a designated epoch for example CD (2006) or LAT-UK (2000) be used. The decision as to when a change in CD for a given area is necessary and the name given to that specific definition of CD remains a matter for each Member State based on their national requirements.

A2.5 DATUMS AND BENCH MARKS

- 1.- It is resolved that heights on shore, including elevations of lights, should be referred to a HW datum. Heights should be referred to Mean Sea Level (MSL) where the tidal range is not appreciable. 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 an appropriate long term 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 International

Terrestrial Reference System (ITRS) or one of its realizations e.g. the World Geodetic System 1984 (WGS84).

A2.9 DESCRIPTION OF CURRENTS AND TIDAL STREAMS

- 1.- It is resolved that a current shall be described by the direction towards which it is running.
- 2.- It is resolved that tidal streams shall be defined by the direction towards which they flow.
 - a) If desired, the terms "flood stream" and "ebb stream" may be used for designating the horizontal movement of the water when the tide is respectively rising or falling, but to avoid any ambiguity, in the case of streams which do not turn at about the time of local high or low water, an indication shall be given of the direction towards which the stream flows.
- 3.- It is resolved that information relating to tidal streams shall be referred to the time of high or low water at a port for which tidal predictions are given in the Tide Tables.
- 4.- It is strongly recommended that the port selected for reference be preferably a port for which daily predictions are given in Tide Tables (standard ports) and where the tides have similar characteristics to those of the currents under consideration.
- 5.- The rules of the above paragraphs 3 and 4 would not be applicable for those countries which publish Current Tables giving daily information relating to tidal streams with reference to the hours of the day. In such instances, it is recommended that the reference be made to the time of slack or maximum current at a place for which daily tidal stream predictions are given in such Tables.
- 6.- It is resolved that velocities shall be given in knots to 1 decimal place.
- 7.- It is recommended that the effect of prevailing winds or long-continued weather conditions on local currents be recorded in Sailing Directions.

A6.4 EXTENSION OF WORLD NETWORK OF TIDAL OBSERVATIONS

- 1.- It is recommended that the world network of tide stations be extended, that some well-distributed stations operate continuously, and that special efforts be directed towards the establishment of stations on the outer sea coast of the continents and oceanic islands.
- 2.- It is recommended that governments which do not possess departments organized for this purpose be advised by the IHB as to the desirability and means of undertaking the installation of tide gauges, the analysis of the resulting records and the preparation of Tide Tables. This work, carried out for selected stations, is of importance both in the interests of navigation and of science.
 - a) It is possible that such work might be financed by commercial corporations or by other institutions if they were brought to appreciate its utility.
- 3.- Concerning the extension of the world network of tidal stations with a view to improving cotidal line charts, it is recommended that:
 - a) Hydrographic Offices give increased attention to the need for additional observations of tides and tidal streams in many areas not now adequately examined. It is noted that in certain regions observations extending over 29 days of tides and tidal streams are sufficient.

K1.7 Deleted.