Hydrographic Services and Standards Committee

Report of the TWLWG

to HSSC 5

November 2013

Principal activities and achievements

- The 5th meeting of the TWLWG took place at the offices of the Finnish Transport Agency, Pasila, Helsinki, Finland from 14 – 16 May 2013 and was hosted by the Finnish Transport Agency (FTA). The meeting was attended by 11 representatives from 9 IHO Member States and the IHB.

Principal activities and achievements

- During discussion on the Standard Constituent List (Task A), UK gave a presentation, which highlighted variations in the angular speed of harmonic tidal constituents and orbital elements based on the most helpful correspondence with the Korean delegate following TWLWG 4. It was agreed UK and France would investigate the angular speed of harmonic tidal constituents with a view to improve the precision of tide predictions; it was considered as a minimum 7 decimal places should be quoted.

Principal activities and achievements

- An update on NOAA progress towards direct time series predictions based on Chart Datum (CD) for on-line availability was provided via teleconference link. It was noted where sufficient information was available for harmonic analysis for predicted tides, this was being conducted whilst maintaining time and height for areas of sparse data. It was highlighted NOAA intend to move away from domestic hard copy tide tables but the issue of international uses are still required to be addressed. The draft document, which contained suggested feature attributes to be included in digital tide tables, was brought to the attention of all participants.

Principal activities and achievements

- The review of IHO Resolution 3/1919, as amended, (Datums and Benchmarks) was brought to a conclusion. Finland briefed on the discussions and principles involved, including a detailed explanation on the complex issues between adjacent areas and how these could be considered by national HOs. The main challenges were the articulation of the correct terminology for areas connected to ocean areas with appreciable variations of water level and areas with minimal variation in water level and limited connection to oceans. An agreed text to IHO Resolution 3-1919, as amended, was generated for submission to HSSC 5 and subsequent Member State approval

Principal activities and achievements

- In response to an output from an IHO/EU bilateral meeting, the TWLWG were invited to investigate the establishment and maintenance of vertical reference frameworks for the high resolution bathymetric surfaces. UK briefed on background and work in progress by NSHCTWG. Sweden highlighted associated work and the connection with the EVR System and its similarities with the EVRF and the move towards a common reference model. UK articulated the actions required and noted the liaison required with NSHCTWG. In addition the work undertaken by the Netherlands and the BLAST Project were noted. Feedback and comment for the following bilateral IHO/EU meeting was subsequently coordinated by the UK.

Problems or outstanding issues

- A minor amendment to IHO Resolution 2/1977, as amended, (National TIDAL Constituent Banks) was proposed to reflect the new WG title. It was agreed a revised text for IHO Resolution 27/1919, as amended, (Time To Be Used) was required to reflect the supply of digital tidal data; the proposed revised text for submission to HSSC 5 and subsequent Member State approval was generated by correspondence and collated by Chile. Concerns were raised over the consistency with other related IHO publications, in particular S-4 and C-13.

Problems or outstanding issues

- Information provided on the appropriate initial areas of a S-100 Product Specification to be discussed and considered within the TWLWG capabilities. The use of gridded data component should be an area for further discussion. It was agreed that the WG concentrate on the product that will be used in the ECDIS. It was suggested once the WG has a clear understanding of the nature of the requirement, it will be in a better position to define components / services that are needed make it happen.

Problems or outstanding issues

- It was recognised that what is required is a type of bathymetric attributed grid/ product that can be used as a layer within an ECDIS. It was noted that the depth information in existing ENC is not sufficiently comprehensive to support this type of application and therefore some form of time variable layer based on a gridded bathymetric surface or triangulated irregular network (TIN) surface would be more viable.

Problems or outstanding issues

- The gridded dataset would effectively become a navigational surface (based on chart datum CD), and the next issue to consider would be how to apply the tidal model including the temporal component to the navigational surface in order that CD depths are adjusted to reflect the tidal / time variables. The tide adjusted depth at each grid cell would drive the portrayal within the EDCIS. This could simply be as colour coded bathymetric surfaces, or green (safe) amber (beware) and red (no go) areas based on the vessels draft.

Problems or outstanding issues

- Correspondence with CSPCWG regarding sections of publication S-4, which relate to tidal issues, were discussed. It was agreed to recommend to HSSC 5 to move Resolution 1/2008, as amended, from Section 2.3.1 to Section 2.2 of IHO publication M-3. After further discussion it was felt Resolution 3/1947, as amended, still had relevance and a number of occurrences on charts where this Resolution applied. It was felt there remained a need to retain this Resolution. TWLWG wished to liaise further with CSPCWG before providing any recommendation on the removal of Resolution 3/1947. In addition it was considered S-4 may require further review by CSPCWG once the revised wording to Resolution 3/1919 has been approved by Member States.

Future work programme

A	Maintain and extend Standard Tidal Constituent List (IHO Task 2.7.2 refers)
B	Develop, maintain and extend a Product Specification for Digital Tide Tables (IHO Task 2.7.3 refers)
C	Liaise with TSMAD on tidal matters and develop, maintain and extend a Product Specification for Dynamic Application of Tides in ECDIS (IHO Task 2.7.5 refers) and a product Specification for the transmission of real-time tidal data (IHO Task 2.7.4 refers)
E	Establishing and maintaining vertical reference frameworks for high resolution bathymetric surfaces in order to develop associated work elements and identify tasks which could benefit from external support.
F	Prepare and maintain an inventory of tide gauges used by Member States and to publish it on the IHO/TWLWG web site (IHO Task 2.7.2 refers).
G	Compare the tidal predictions generated as a result of analysis of a common data set using different analysis software (IHO Task 2.7.2 refers).
H	Review and provide feedback of On-line real time water level observation document (IHO Task 2.7.2 refers).
I	Conduct the 2014 and 2015 meetings of TWLWG (IHO Task 2.7.3 refers)

Future work programme

- Work Item C; Dynamic Application of Tides in ECDIS
  - This requires more focus and impetus.
  - TWLWG recognise the limits of its ability to drive this forward and the scoping document requires more work.
  - There is potential for assistance to be given to TWLWG from an external expert contributor which would require funding from the IHB.

Action requested of HSSC

- a. note this report
- b. re-appoint the TWLWG to continue its work under its current Terms of Reference
- c. endorse the draft Work Plan
- d. approve the draft IHO Resolution 3/1919 as amended, (Datums and Benchmarks) and the definitions of Low Water, Mean Water and High Water for submission to IHO Member States
- e. approve the minor amendment to IHO Resolution 2/1977, as amended, (National TIDAL Constituent Banks)
- f. approve the draft revised text for IHO Resolution 27/1919, as amended, (Time To Be Used)
- g. approve the minor amendment to IHO Resolution 1/1977, as amended, (Collection and Publication of Tidal Data).