

8<sup>th</sup> IHO-HSSC Meeting

## Report of the Tides, Water Level and Currents Working Group

Submitted by:	Chairman, TWCWG
Related Documents:	Report of TWCWG1 meeting (available from IHO web site).
Related Projects:	None

<b>Chair:</b>	Gwenaële Jan, France
<b>Vice-Chair:</b>	Louis Maltais, Canada
<b>Secretary:</b>	David Wyatt, IHB
<b>Member States:</b>	Argentina, Australia, Brazil, Canada, Chile, China, Denmark, Ecuador, Egypt, Estonia, Finland, France, Germany, India, Indonesia, Italy, Japan, Netherlands, Korea Rep of, New Zealand, Norway, Peru, Poland, Portugal, Russian Federation, Singapore, South Africa, Spain, Sweden, Ukraine, UK, Uruguay, USA, Venezuela.
<b>Expert Contributor:</b>	CCOM-UNH, SPAWAR Atlantic, C-Map
<b>Organisations:</b>	IOC-GLOSS
<i>see Annex A for full details</i>	

**Meetings Held During Reporting Period**

TWCWG1 25-29 April 2016, Niterói, Brazil

**Next Meeting**

TWCWG2 25-29 May 2017, Victoria, BC, Canada

**Work Program**

The 1st meeting was held at the Directorate of the Centro do Hidrográfico Marinha - Marinha do Brasil (CHM), Niterói, Brazil, from 25 to 29 April 2016 under the chairmanship of Ms Gwenaële Jan of France and was hosted by the Directorate of Hydrography and Navigation of the Brazilian Navy. The meeting was attended by 25 representatives from 13 IHO Member States (Australia, Brazil, Canada, Finland, France, Germany, Japan, Netherlands, Norway, Peru, Russian Federation, UK and USA), the IHB and expert contributors from the Centre for Coastal and Ocean Mapping, University of New Hampshire, and SPAWAR Atlantic.

Significant time was set aside to progress the three S-100 based Product Specifications, for which the TWCWG is responsible. One and half days of breakout sessions enabled participants to focus on the draft Product Specification documents as well as making significant progress on the feature attributes and metadata. The results of using the test datasets for S-111 – Surface Currents – were demonstrated. It was agreed to seek amendments to the titles of S-104 and S-112, to make them better describe their intended use. It was noted that at least one national vertical datum in use was not included in the S-100 list of vertical datums, which highlighted the need to ensure that all currently in use vertical datums are included.

Further progress was made on a standard for digital tide tables with the refinement of a list of fundamental attributes being generated by the USA. Although some inputs had been received, it was agreed to highlight the inventory of tide gauges and current meters, and the list of Actual Tides On-line Links through Regional

Hydrographic Commissions with the purpose of raising awareness and encouraging additional inputs. Due to the increased use of Vertical Reference Frame datums based on the Global Navigation Satellite System (GNSS) for the reduction of soundings, it was agreed to create a repository in the TWCWG section of the IHO website where details of these datums could be posted.

As instructed by HSSC, proposed revised wording of IHO Resolution 3/1919, as amended, was agreed. The proposed revision has been submitted for adoption by IHO Member States.

TWCWG1 received a brief on the Capacity Building (CB) Tide and Current courses delivered highlighting that the workshop was aimed at developing marine states either to establish tide stations or maintain them. It was agreed there was less need for tidal theory and training on software was not considered a benefit. South Africa highlighted the need for close coordination with Regional CB Coordinators to ensure the correct candidates were nominated with the required language skills; the need to have participants with approximate same knowledge and background to ensure all benefited. South Africa also suggested the course is amended to be three days' duration, one day theory and two days field work/problem solving. TWCWG members were requested to review the contents to suggest any further amendments.

The draft Work Plan, attached at Annex B, was discussed and agreed.

### **Progress on HSSC Action Items**

HSSC8-5.8:

TWCWG1 completed its review and developed draft wording for IHO Resolution 3/1919, as amended, for submission to IHO Member States. This revised text has been approved, IHO Circular LC27/2016

It was agreed the titles of the S-104 and S-112 needed to better describe their intended use and thus it was agreed to remove direct reference to AIS ASM and expand the title to be 'Dynamic Water Level Data Transfer Product Specification' as described to HSSC6. The final proposed PS titles were confirmed as:

*S-104 – Water Level Information for Surface Navigation*

*S-112 – Dynamic Water Level Data Transfer*

### **Problems Encountered**

N/A

### **Any Other Items of Note**

N/A

### **Conclusions and Recommended Actions**

N/A

### **Justification and Impacts**

N/A

### **Action Required of HSSC**

The HSSC is invited to:

- a. note this report
- b. reappoint the TWCWG to continue its work under its current Terms of Reference, see Annex C
- c. approve the revised names of the S-100 base Product Specifications as highlighted above
- d. endorse the draft Work Plan at Annex B

## Tides, Water Level and Surface Currents Working Group (TWCWG) – Updated 22 June 2016

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Annex A to TWCWG Report to HSSC8

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**Annex A to TWCWG Report to HSSC8**

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Annex A to TWCWG Report to HSSC8

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## TWCWG WORK PLAN 2017-18

## Objective

- a) To monitor developments related to tidal and water level observation, analysis and prediction and other related information including vertical and horizontal datums;
- b) To develop and maintain the relevant IHO standards, specifications and publications for which it is responsible in liaison with the relevant IHO bodies and non-IHO entities;
- c) To develop standards for the delivery and presentation of navigationally relevant current information; and
- d) To provide technical advice and coordination on matters related to tides, water levels, currents and vertical datum.

## Tasks

A	Maintain the list of standard tidal constituents (IHO Task 2.7.2.3)
B	Compare the tidal predictions generated as a result of analysis of a common data set using different analysis software
C	Develop, maintain and extend a Product Specification for digital tide tables (IHO Task 2.7.3)
D	Develop, maintain and extend a Product Specification for the transmission of real-time tidal data (IHO Task 2.7.4)
E	Develop, maintain and extend a Product Specification for the transmission of real-time surface current data (S-111 - IHO Task 2.13.3)
F	Develop, maintain and extend a Product Specification for dynamic surface currents in ECDIS (IHO Task 2.13.4)
G	Develop, maintain and extend a Product specification for dynamic tides in ECDIS (IHO Task 2.7.5)
H	Liaise with S-100WG on tidal and current matters relevant to ECDIS applications
I	Liaise with industry experts on the development of product specifications for tides and currents
J	Prepare and maintain an inventory of tide gauges and current meters used by Member States and publish it on the IHO/TWLWG web site (IHO Task 2.7.2.4)
K	Review feedback of on-line real time water level observation document
L	Maintain and extend the relevant IHO standards, specifications and publications as required (IHO Tasks 2.7.2 and 2.13.2)
M	Conduct the 2016 and 2017 meetings of TWCWG and its sub-group(s) and project team(s) (IHO Tasks 2.7.1 and 2.13.1)
N	Develop and maintain material for course on Tides, Water Levels and Currents

Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S- Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
A.1	Maintain the list of standard tidal constituents	M		-	Permanent	O	Chris Jones*		Review current list of published tidal constituents
B.1	Compare the tidal predictions generated as a result of analysis of a common data set using different analysis software.	M		-	Permanent	O	Hilda Sande * All		Select Common data set Analyze using different software Predict common set of tides Compare results

Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S- Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
C.1	Develop, maintain and extend the standard for digital tide and tidal current tables	H	Prepare draft Standard	2009	<del>2016</del> 2017	O	Peter Stone* Chris Jones Zarina Jayaswal		
D.1	Develop and maintain a standard for the transmission of real-time tidal data (S-112)	H		2009	<del>2017</del> 2018	O	Chris Jones* All		Establish joint project teams as required. Liaise with S-100WG (see H.1) Liaise with industry experts (see I.1)
E.1	Develop and maintain a product specification for the transmission of real-time surface current data (S-111)	H		2013	<del>2017</del> 2018	O	Kurt Hess* Louis Maltais		Establish joint project teams as required. Liaise with S-100WG (see H.1) Liaise with industry experts (see I.1)
F.1	Develop and maintain a product specification for dynamic application of navigationally significant surface currents in ECDIS	H		2013	<del>2017</del> 2018	O	Louis Maltais* Kurt Hess		Establish joint project teams as required. Liaise with S-100WG (see H.1) Liaise with industry experts (see I.1)
G.1	Develop and maintain a product specification for dynamic application of tides in ECDIS	H	Prepare draft Product Specifications (S-1xx) for tidal data in S-100.  Prepare draft Portrayal model for tidal data in S-100.	2009	<del>2017</del> 2018	O	Zarina Jayaswal* Glen Rowe Jimin Ko  Peter Stone* Zarina Jayaswal		Establish joint project teams as required. Liaise with S-100WG (see H.1) Liaise with industry experts (see I.1)
H.1	Liaise with S-100WG on tidal and current matters relevant to ECDIS applications	H		-	Permanent	O	Gwenaële Jan Kurt Hess		Establish joint project teams as required.

Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S- Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
I.1	Liaise with industry experts on the development of product specifications for tides and currents	H		-	Permanent	O	All		
J.1	Maintain an inventory of tide gauges and current meters used by Member States and publish it on the IHO/TWCWG web site.	H		-	Permanent	O	David Wyatt* All		Initial inventory from TWCWG members available on IHO web site.
K.1	Review feedback of on-line real time water level observation document	L		-	Permanent	O	Zarina Jayaswal* All		
L.1	Maintain and extend the relevant IHO standards, specifications and publications	M  M	Review wording of IHO Resolution 3/1919, as amended, in light of revised definitions for MSL and LAT	2014	<del>2015</del> 2016	O  C	Gwenaële Jan	IHO Resolutions in M-3 S-60 User's Handbook on Datum Transformations involving WGS 84	
N.1	Develop and maintain material for course on Tides	H	Delivery in 2015	-	Permanent	O	Ruth Farre* Louis Maltais Peter Stone Zarina Jayaswal		Adapt currently available course material to create a course suitable for delivery in support of CBSC requests

**Meetings (Task M)**

<b>Date</b>	<b>Location</b>	<b>Activity</b>
25-28 Mar 2014	Wollongong, Australia	TWLWG-6
3-5 Jun 2014	Québec City, Canada	SCWG-2
21-24 April 2015	Silver Spring, Maryland, USA	TWLWG-7
13-15 May 2015	Tokyo, Japan	SCWG-3
25-29 April 2016	Niterói, Brazil	TWCWG-1
8-12 May 2017	Victoria, BC, Canada	TWCWG-2

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## Tides, Water Level and Currents Working Group (TWCWG)

### Terms of Reference and Rules of Procedure

References: *6<sup>th</sup> HSSC Meeting (Viña del Mar, Chile, November 2014)*  
*7<sup>th</sup> HSSC Meeting (Busan, Republic of Korea, November 2015)*

#### 1. Objective

- a) To provide technical advice and coordination on matters related to tides, water levels, currents, relevant oceanographic data and vertical datum, including integrated water level/current data models.
- b) To support the development and maintenance of related specifications in liaison with the relevant IHO bodies and non-IHO entities;
- c) To develop and maintain the IHO publications for which the WG is responsible.

#### 2. Authority

This WG is a subsidiary of the Hydrographic Services and Standards Committee (HSSC). Its work is subject to HSSC approval.

#### 3. Composition and Chairmanship

- a) The WG shall comprise representatives of IHO Member States (MS), Expert Contributors (EC), observers from accredited NGIO, and a representative of the IHB (“IHB” to be replaced by “IHO Secretariat” when the IHO Secretariat is established). A membership list shall be maintained and posted on the IHO website.
- b) EC membership is open to entities and organizations that can provide a relevant and constructive contribution to the work of the WG.
- c) The Chair and Vice-Chair shall be a representative of a MS. The election of the Chair and Vice-Chair shall be decided at the first meeting after each ordinary session of the Conference (Conference to be replaced by Assembly when the revised IHO Convention enters into force) and shall be determined by vote of the MS present and voting.
- d) If a secretary is required it should normally be drawn from a member of the WG.
- e) If the Chair is unable to carry out the duties of the office, the Vice-Chair shall act as the Chair with the same powers and duties.
- f) ECs shall seek approval of membership from the Chair.
- g) EC membership may be withdrawn in the event that a majority of the MS represented in the WG agrees that an EC’s continued participation is irrelevant or unconstructive to the work of the WG.
- h) All members shall inform the Chair in advance of their intention to attend meetings of the WG.
- i) In the event that a large number of EC members seek to attend a meeting, the Chair may restrict attendance by inviting ECs to act through one or more collective representatives.

#### 4. Procedures

- a) The WG should:
  - (i) monitor and develop the use of tidal, water level, current information and relevant oceanographic data including integrated water level/current data models;
  - (ii) advise on the use of vertical datums;
  - (iii) advise on tidal, water level and current observation, analysis and prediction;
  - (iv) advise on matters concerning exchange, distribution and use of tidal, water level, current information and relevant oceanographic data related data/information;
  - (v) study principles and contribute to the development of improved methods for conveying tidal, water level, current information and relevant oceanographic data to mariners and other users;
  - (vi) keep under review the relevant IHO publications and resolutions in order to advise HSSC on their updating;

- (vii) draft or revise guidance document(s), resolutions and specifications as appropriate and as instructed by HSSC; and
- (viii) consider new related topics as instructed by HSSC and advise HSSC accordingly.
- b) The WG should work by correspondence, teleconferences, group meetings, workshops or symposia. The WG should meet about once a year. When meetings are scheduled, and in order to allow any WG submissions and reports to be submitted to HSSC on time, WG meetings should not normally occur later than nine weeks before a meeting of the HSSC.
- c) Decisions should generally be made by consensus. If votes are required on issues or to endorse proposals presented to the WG, only MS may cast a vote. Votes at meetings shall be on the basis of one vote per MS represented at the meeting. Votes by correspondence shall be on the basis of one vote per MS represented in the WG.
- d) The date and venue of group meetings shall normally be announced by the Chair at least six months in advance.
- e) The draft record of meetings shall be distributed by the Chair (or the secretary) within six weeks of the end of meetings and participants' comments should be returned within three weeks of the date of despatch. Final minutes of meetings should be posted on the IHO website within three months after a meeting.
- f) Sub-working groups and project teams may be created by the WG or proposed to HSSC to undertake detailed work on specific topics. The terms of reference and rules of procedure of the sub-working groups and project teams are determined or proposed by the WG as appropriate.
- g) The WG should liaise with other IHO bodies, international organizations and industry to ensure the relevance of its work.
- h) The WG should prepare annually a report on its activities and a rolling two-year work plan, including expected time frame.