IHO File No S3/8151 & S3/6004

| CIRCULAR LETTER 31/2019 |
| 26 June 2019 |

CALL FOR APPROVAL OF A NEW IHO RESOLUTION ON DIGITAL TIDE TABLES

References:

A.   Publication M-3, 2nd Edition 2010 – Updated to August 2018 – *Resolutions of the IHO*.

B.   IHO Circular Letter 20/2019, dated 28 March - *The IHO Online Form System for Responses to Circular Letters and Input to IHO Publications (P-5 and C-55).*

Dear Hydrographer,

1.   The approval of Member States on the proposed new IHO Resolution 01/2019 – *Digital Tide and Tidal Current Tables* – proposed by the Tide, Water Level and Current Working Group (TWCWG) and endorsed by the Hydrographic Services and Standards Committee (HSSC) at its 11th meeting, held in Cape Town, South Africa, in May 2019 is hereby requested.

2.   The draft proposed new Resolution is provided in Annex A (English only).

3.   Member States are requested to take into account the endorsement of the HSSC and to consider the adoption of this proposal by providing their reply at their earliest convenience and no later than **31 August 2019** by email (cl-lc@iho.int) or by fax (+377 93 10 81 40) when using the Voting Form in Annex B, but preferably using the IHO Online Form System (see Reference B) by accessing the following link:
https://IHO.formstack.com/forms/cl31_2019

On behalf of the Secretary-General
Yours sincerely,

Abri KAMPFER
Director

Annexes:
A.   Draft Proposed New IHO Resolution 01/2019.
B.   Voting Form

Proposed new IHO Resolution 01/2019
(*English only*)

TITLE	Reference	Last amendment (CL or IHC)	1st Edition Reference
Digital Tide and Tidal Current Tables	**01/2019**	**xx/2019**	**Ver 1.0**

1   It is resolved that member Hydrographic Organizations (HO) may choose to publish their tide and tidal current tables in either paper format or digitally. If digitally, they can be distributed either through the HO's web site, or representative complement or via portable media such as a DVD.

General Guidelines for Digital Tide and Tidal Current Tables

2   It is resolved that digital tide and tidal current tables should adhere to all the same requirements as existing paper tide and tidal current tables as specified in IHO Programme 2 "Hydrographic Services and Standards" Section 2.2 – Tides and Water Levels

3   It is resolved that the issuing office should provide documentation on how to install or read the electronic tables, minimum computer specifications how to obtain product support and general information on the Digital Tide and Tidal Current Tables. This information should be provided in either hardcopy written form (for example, on a separate sheet of paper or on the cover of the disk or other media), or electronically in a plain ASCII text 'readme.txt' type of file. This file should also include user license and/or condition of use information.

4   It is resolved that the issuing office should provide its formal name, mailing address; web url and point of contact information on the cover of the media. It should also provide information on the production of the tables (including both address and website), information on how to obtain annual updates, and how to obtain interim updates or errata information.

5   It is resolved that the digital tide and tidal current tables should include a statement concerning the standing of the digital tables as meeting the applicable maritime regulations, either SOLAS and/or local country carriage requirements.

Formats for Digital Tide and Tidal Current Tables

6   It is resolved that there shall be two allowable formats for digital tide and tidal current tables.
        A.   Scanned Images of Tide and Tidal Current Tables: This format consists of scanned images of the paper tide tables. This format should have the following attributes.
        B.   Electronically generated Tide and Tidal Current Predictions: This format consists of software and a user interface that calculates tide and tidal current predictions from stored harmonic constituents or time and range offsets.

Detailed Specifications for Digital Tide Tables – Scanned Images of Tide Tables:

7   It is resolved that Scanned Images of Tide Tables should follow the following specifications.
        a. Should be a faithful reproduction of all the pages of printed tide tables.

        b. The images should be formatted in a widely available, common format. Examples formats include, but not limited to, PDF, tiff, Jpeg, Gif. If PDF files are provided, then information on how to download Adobe© Reader must be provided.

        c. If multiple books are published, then each book should be located within its own folder and clearly identified.

        d. No modification of the scanned images is permitted by users.

Detailed Specifications for Digital Tide Tables – Electronically Generated Tide Predictions

8   It is resolved that Electronically Generated Tide Predictions should follow the following specifications:

        a. Station Selection: It is recommended that station selections can either be map based or list based, and should be organized by water body.

        b. Station Information: It is recommended that the following information be included with each station;
        Station Name and Number (or ID) as appropriate
        Body of Water Descriptor (if appropriate)
        Latitude and Longitude (following ISO 6709 convention, stated in degrees and 6 decimals)
        Horizontal and Vertical Datum convention
        Location Map with nearby prediction stations identified
        URL to station or data portal.

        c. It is recommended that Earth-Moon-Sun Astronomical Calendar Information (Tabular and/or integrated with graphical data output) be included.

        d. It is recommended that Sunrise/Sunset Calendar Information (Tabular and/or integrated with graphical data output)

        e. It is recommended that the default reference datum is the Chart Datum used by the Country furthermore, it is recommended that the user have the ability to reference predictions to other tidal datums supported by the HO (such as LAT, HAT, MHW, MSL) and user identified datums such as a national geodetic or ellipsoidal datum or other coastal engineering or threshold datums that are pertinent.

        f. It is recommended that data displays and tables can be toggled to both in Metric or English units, with default depending upon country

        g. It is recommended that the time displayed is the legal local time as default, with user selected option for UTC/GMT, daylight savings time, etc. Legal time includes daylight savings time if applicable. Furthermore, when time zone information is displayed it should follow the convention that negative time zone offsets are used for east longitude and positive offsets for west longitude.

h. It is recommended that the following tide prediction source metadata information be provided;
Harmonic Constituents or Time and Range Correction to Reference Station,
Dates of Harmonic Analyses time series used to create the set of Harmonic Constituents used in the prediction,
Dates of the observations used to create time and height corrections (for nonharmonic based predictions) to a reference Station,
Links to the list of the Harmonic Constituents used in the Prediction. Furthermore, the display of the Harmonic Constituents should adhere to the IHO National Tidal Constituent Banks Resolution 2/1977 as amended 42/2000 A6.8
The name of the Harmonic Analysis program used to generate the harmonic constituents.

i. It is recommended that the HO provide and display tidal sea level amplitude prediction with a minimum of 4 decimals precision (for metric system) if possible.

j. It is recommended that users have the ability to obtain output in common formats such as PDF, TXT, XML, CSV, S-112 single point formats

k. It is recommended that additional information be provide special warning explaining areas of anomalous tidal conditions, special datums, or tidal based hazards to navigations (dual high or low waters, tidal bores, river flow dependencies and river datums, frequent non-tidal conditions, etc..)

l. It is recommended, when applicable, that estimates of uncertainty in the predicted times and heights of high and low waters be provided to users.

Detailed Specifications for Graphical Display of Electronic Tide Predictions

9   It is resolved that the predictions have the ability to obtain graphical and tabular output for desired time period (either historical and into the future) and should contain the following attributes with the objective not to prescribe a specific graphical view but rather to identify common elements that transcend all types of graphs:

a   It is recommend that the predictions can be displayed as discrete points or a continuous curve using a curve fit routine to times and heights of high and low waters or to the time series values.

b It is recommended that all axes should be clearly labelled

c It is recommended that time series data should have a minimum, 1- hour increments

d It is recommended that times and heights of predicted high and low tides should be provided

e It is recommended that the default datum should be the same as chart datum for the location of the prediction

f It is recommended that the tidal height units default should be the same as the HO's printed tables

g It is recommended that the display should include station information (as defined above)

h It is recommended that the display include the name and/or the insignia of the source authority organization

i It is recommended that the display should have the option to view the tide prediction numerical values used to create the graphic.

j It is recommended that the display of the graphical data should be able to be adjusted to suit daytime, twilight, and night time viewing

Detailed Specifications for Digital Tidal Current Tables

10   It is resolved that Digital Tidal Current Tables can be in the same two formats as Digital Tide Tables and the same requirements that apply to digital tide tables pertain to tidal current tables.

11   It is resolved that electronically generated Tidal Current Predictions do have additional specifications as identified:

a It is recommended that the depth of prediction be included in the metadata and include a the descriptor that the depth is either from the surface down or from the bottom up

b It is recommended, if applicable, flood and ebb current direction (referenced to True North) be presented.

c It is recommended that for graphical display of tidal currents the default speed units should be knots

d It is recommended that for graphical display of tidal currents the default direction units should be degrees (referenced to true north).

Examples of Digital Tide Tables

USA - NOAA Example - Scanned Tide Table

80

Albany, New York, 2015

Times and Heights of High and Low Waters

	January	February	March
	Time / Height	Time / Height	Time / Height

Time meridian 75° W. 0000 is midnight. 1200 is noon. Times are not adjusted for Daylight Saving Time.
Heights are referred to mean low water during lowest river stages which is the chart datum of soundings.

UKHO Example

THE UNITED KINGDOM
HYDROGRAPHIC OFFICE
ADMIRALTY EASYTIDE

PREDICT | ABOUT EASYTIDE | PRICING | FAQ | MY ACCOUNT

Your EasyTide Prediction (free)

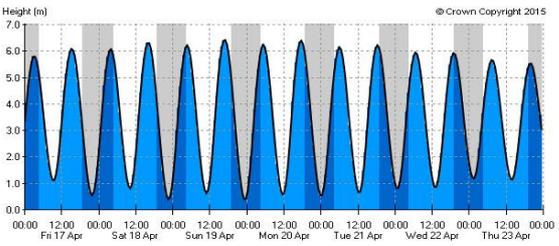**View printer friendly prediction**

Bridlington, England

Port predictions (Standard Local Time) are equal to UTC

Start Date: Today - Friday 17th April 2015 (Standard Local Time)

Duration: 7 days

Tidal prediction chart

Height (m)   © Crown Copyright 2015

00:00 12:00 00:00 12:00 00:00 12:00 00:00 12:00 00:00 12:00 00:00 12:00 00:00 12:00 00:00
Fri 17 Apr   Sat 18 Apr   Sun 19 Apr   Mon 20 Apr   Tue 21 Apr   Wed 22 Apr   Thu 23 Apr

Adjust chart time axis

Daylight saving: 0 hours
Max graph size: 7 days
Apply

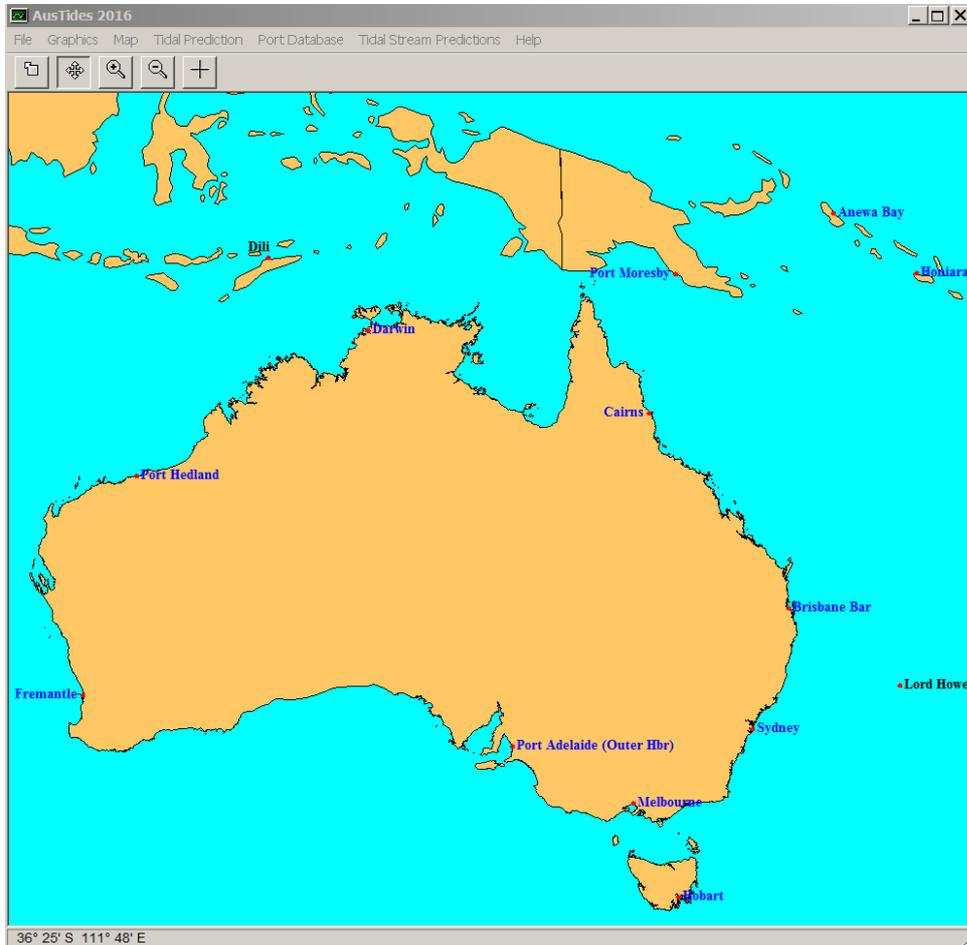**Daylight Saving Warning**

EasyTide predictions are based on the standard time of the country concerned. For the UK this is GMT (which is in force from 02:00 am on the last Sunday in October until 01:00am on the last Sunday in March). The specific dates of the Sundays in October and March for the next three years can be found on the directgov website at http://www.direct.gov.uk/en/index.htm. The "Daylight saving" drop-down box in the top right-hand corner of the screen can be used to convert the predicted times to "Daylight Saving Time". In the UK this is known as British Summer Time (BST) and is one hour later than GMT. Therefore BST applies to dates and times **outside** those mentioned above.

Note: the date shown underneath 12:00 on any given day is applicable to the previous and next periods of 12 hours

Fri 17 Apr				Sat 18 Apr				Sun 19 Apr			
HW	LW	HW	LW	HW	LW	HW	LW	HW	LW	HW	LW
03:05	09:19	15:15	21:49	03:51	10:07	16:01	22:36	04:34	10:53	16:46	23:20
5.8 m	1.1 m	6.1 m	0.6 m	6.1 m	0.8 m	6.3 m	0.4 m	6.2 m	0.6 m	6.4 m	0.4 m

Australian Example

BRISBANE BAR

Local Standard
Time Zone: -10:00 U.T.

27° 22' S 153° 10' E

Year 2016

PREDICTION DATUM below MSL: 1.31 (m)

Port 59980

Height in metres above LAT

16:00 0.4m
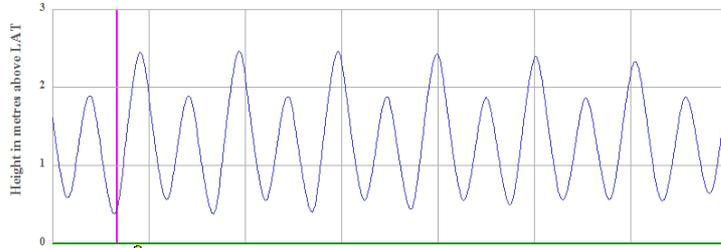
Jun 20 Mo		21 Tu		22 We		23 Th		24 Fr		25 Sa		26 Su	
Time	m	Time	m	Time	m	Time	m	Time	m	Time	m	Time	m
0343	0.6	0423	0.6	0503	0.5	0543	0.5	0624	0.5	0024	2.4	0109	2.3
0911	1.9	0951	1.9	1032	1.9	1115	1.9	1200	1.9	0707	0.5	0755	0.5
1520	0.4	1557	0.4	1635	0.4	1713	0.4	1755	0.5	1250	1.9	1347	1.9
2150	2.4	2227	2.5	2304	2.5	2343	2.4			1843	0.6	1939	0.6

Moon phases supplied by
Sydney Observatory

No account is taken of Daylight Saving Time

These predictions are identical to those published in ANTT and can thus be used as an official navigational publication.
Prediction Datum is LAT, which may not be Chart Datum. Correction to Chart Datum can be found at:
Level / To Chart Datum Corrections and Zero of Predictions Window.
© Copyright Commonwealth of Australia 2015

Example from SHOM (France)

SH○M

L'océan
en référence

Tides tables

## Select harbor

Brest (France) ✂ ◇

Coordinates : 048° 23' 00.0'' N, 004° 30' 00.0'' W

| Tides tables | Water level by hour | Tides coefficient |

📅 05/02/2018   🕐 S_Time ▾

Monday February 5, 2018			Tuesday February 6, 2018			Wednesday February 7, 2018			Thursday February 8, 2018		
Hour	**Height**	**Coefficient**	**Hour**	**Height**	**Coefficient**	**Hour**	**Height**	**Coefficient**	**Hour**	**Height**	**Coefficient**
LW 02:20	1.31	–	LW 03:03	1.74	–	LW 03:49	2.20	–	LW 04:42	2.62	–
HW 08:18	6.88	85	HW 08:59	6.40	71	HW 09:45	5.91	56	HW 10:41	5.48	43
LW 14:46	1.49	–	LW 15:30	1.98	–	LW 16:19	2.45	–	LW 17:17	2.81	–
HW 20:41	6.45	78	HW 21:24	6.02	63	HW 22:16	5.62	49	HW 23:21	5.34	39

● · · · · · ·
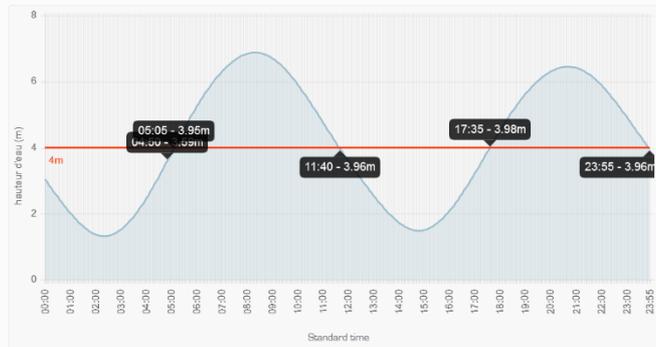
You can display the water level to a given hour [Water level option] or the hours according to a treshold [Treshold option].
Click on the chart to put a line [keep the mouse pressed to move the line] or enter a value in the following field

○ Water level   ● Treshold   ○ None

4

IHO File No. S3/8151 & S3/6004

Proposed new IHO Resolution 01/2019

Voting Form
*(to be returned to the IHO Secretariat **by 31 August 2019**)*
E-mail: cl-lc@iho.int *- Fax: +377 93 10 81 40*

<u>Note</u>:   The boxes will expand as you type your answers.

Member State:
Contact:
E-mail:

Do you approve the proposed new IHO Resolution 01/2019?

YES   NO

If you answer 'NO', please explain your reasons in the comment section below.
Comments:

Signature :
Date :