



Dossiers de la OHI N.ºs S3/8151 & S3/6004

**CARTA CIRCULAR N.º 31/2019**  
**26 de junio del 2019**

## **SOLICITUD DE APROBACIÓN DE UNA NUEVA RESOLUCIÓN SOBRE TABLAS DE MAREAS DIGITALES**

### Referencias:

- A. Publicación M-3, 2.<sup>a</sup> Edición 2010 - Actualizada en agosto del 2018 - *Resoluciones de la OHI*;
- B. Carta Circular de la OHI N.º 20/2019, del 28 de marzo - *Sistema de formularios en línea de la OHI para las respuestas a las Cartas Circulares y la contribución a las Publicaciones de la OHI (P-5 and C-55)*.

Estimado(a) Director(a),

1. En la presente Carta Circular se requiere la aprobación de los Estados Miembros sobre la propuesta de nueva Resolución de la OHI N.º 01/2019 - *Tablas de Mareas y de Corrientes de Mareas Digitales* - propuesta por el Grupo de Trabajo sobre las Mareas, el Nivel del Mar y las Corrientes (TWCWG) y aprobada por el Comité de Servicios y Normas Hidrográficas (HSSC) en su 11.<sup>a</sup> reunión, celebrada en Ciudad del Cabo, Sudáfrica, en mayo del 2019.
2. Se adjunta en el Anexo A (*en Inglés únicamente*) el proyecto de propuesta de nueva Resolución.
3. Se ruega a los Estados Miembros que tengan en cuenta la aprobación del HSSC y que consideren la adopción de esta propuesta proporcionando su respuesta lo antes posible y **lo más tardar el 31 de agosto del 2019**, por email (cl-lc@iho.int) o por fax (+377 93 10 81 40), al utilizar la Papeleta de Voto del Anexo B, pero utilizando preferentemente el Sistema de formularios en línea de la OHI (ver la Carta Circular de la Referencia B) accediendo mediante el enlace siguiente:

[https://IHO.formstack.com/forms/cl31\\_2019](https://IHO.formstack.com/forms/cl31_2019)

En nombre del Secretario General  
Atentamente,

Abri KAMPFER  
Director

### Anexos:

- A. Proyecto de propuesta de la nueva Resolución de la OHI N.º 01/2019 (*en Inglés únicamente*);
- B. Papeleta de Voto.

**Propuesta de la nueva Resolución de la OHI N.º 01/2019**

**Proposed new IHO Resolution 01/2019**  
(*en Inglés únicamente*)

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

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	
1 0048 5.1 155	16 0026 4.2 129		1 0214 5.2 158	16 0144 4.9 146		1 0102 5.4 165	16 0023 5.1 155	
Th 0741 -0.3 -20	Sa 0705 0.4 12		Su 0859 -0.1 -3	M 0836 0.3 9		Su 0743 0.5 15	M 0715 0.9 27	
1517 5.5 169	Sa 1241 5.0 152		Su 2145 -0.3 -9	M 1519 5.4 165		Su 1924 5.5 168	M 1209 5.7 174	
2026 -0.4 -12	Sa 2006 0.4 12		2 0302 5.2 158	17 0234 5.0 152		2 0153 5.5 168	17 0120 5.4 165	
0142 5.1 155	17 0121 4.3 131		M 0946 -0.1 -3	17 0923 0.1 3		M 0834 0.4 12	Tu 0817 0.6 18	
0833 -0.3 -9	Sa 0803 0.3 9		M 1519 5.4 165	17 1445 5.7 174		Tu 1413 5.6 171	Tu 1333 5.9 180	
1407 5.5 168	Sa 2101 0.2 6		2 2230 -0.3 -9	18 0322 5.3 162		2 0241 5.6 171	17 0212 5.7 174	
2120 -0.4 -12	Sa 2101 0.2 6		3 0348 5.2 158	18 1027 -0.2 -6		3 0922 0.4 12	18 0915 0.3 9	
3 0233 5.1 155	18 0211 4.4 134		M 0946 -0.1 -3	18 1535 5.9 180		3 1457 5.6 171	18 1428 6.0 183	
0923 -0.3 -9	Sa 0858 0.1 3		M 1519 5.4 165	18 2313 -0.2 -6		3 2201 0.1 3	18 2150 0.3 9	
1454 5.6 171	Sa 1417 5.4 165		4 0431 5.1 155	19 0409 5.4 165		4 0325 5.7 174	19 0300 6.0 183	
2210 -0.5 -15	Sa 2153 0.0 0		4 1112 0.1 3	19 1119 -0.3 -9		4 1006 0.4 12	19 1009 0.1 3	
4 0221 5.1 155	19 0257 4.6 140		M 0930 5.0 152	19 1626 5.9 180		4 1539 5.6 171	19 1519 6.2 189	
0926 -0.2 -6	M 0933 -0.1 -3		M 1540 5.3 162	19 2341 0.1 -3		4 2241 0.1 -3	19 2229 0.1 9	
1538 5.5 168	M 1503 5.6 171		5 0513 5.1 155	20 0458 5.6 171		5 0406 5.7 174	20 0347 6.2 189	
2256 -0.4 -12	M 2343 -0.2 -6		5 1152 0.2 6	20 1211 -0.4 -12		5 1049 0.4 12	20 1102 -0.1 -3	
5 0400 5.0 152	20 0343 4.8 146		5 1718 5.2 158	20 1719 5.9 180		5 1817 5.5 168	20 1610 6.2 189	
1054 -0.1 -3	20 1044 -0.2 -6		6 0029 0.0 0	21 0040 -0.3 -9		6 0219 0.3 9	21 0435 6.3 192	
1621 5.4 165	20 1549 5.7 174		6 0553 5.0 152	21 0549 5.6 171		6 1130 0.4 12	21 1154 -0.1 -3	
2341 -0.3 -9	21 0430 4.9 149		6 1231 0.3 9	21 1303 -0.3 -9		6 1854 5.4 165	21 1702 6.1 188	
6 0454 4.9 149	21 1136 -0.4 -12		6 1754 5.1 155	21 1815 5.8 177		6 2354 0.4 12	21 2259 0.1 9	
1136 0.1 3	21 1639 5.7 174		7 0104 0.2 6	22 0128 -0.2 -6		7 0520 5.6 171	22 0013 0.2 6	
1702 5.3 162	22 0018 -0.5 -15		7 0632 5.0 152	22 0642 5.6 171		7 1229 5.3 162	22 0623 6.3 192	
7 0022 -0.2 -6	22 1227 -0.4 -12		7 1310 0.5 15	22 1913 5.6 171		7 1728 5.3 162	22 1756 6.0 183	
0540 4.8 146	22 1733 5.7 174		8 0137 0.3 9	23 0216 -0.1 -3		8 0027 0.5 15	23 0100 0.3 9	
1216 0.2 6	23 0106 -0.5 -15		8 0730 5.0 152	23 0739 5.6 171		8 0550 5.6 171	23 0615 6.2 189	
1742 5.1 155	23 1320 -0.4 -12		8 1350 0.6 18	23 1452 -0.1 -3		8 1249 0.6 18	23 1337 0.1 3	
8 0103 0.0 0	23 1830 5.6 171		8 1851 4.9 149	23 2012 5.5 168		8 1757 5.2 158	23 1853 5.8 177	
0625 4.7 143	24 0154 -0.5 -15		9 0208 0.4 12	24 0307 0.1 -3		9 0058 0.6 18	24 0148 0.5 15	
1255 0.4 12	24 0812 5.1 155		9 0730 5.0 152	24 0837 5.3 168		9 0607 5.7 174	24 0703 6.1 186	
1822 5.0 152	24 1414 -0.4 -12		9 1434 0.7 21	24 1549 0.1 3		9 1330 0.7 21	24 1431 0.3 9	
9 0141 0.1 3	24 1931 5.5 168		9 1924 4.8 146	24 2111 5.4 165		9 1821 5.2 158	24 1951 5.7 174	
0710 4.6 140	25 0244 -0.4 -12		10 0240 0.5 15	25 0400 0.2 6		10 0129 0.7 21	25 0239 0.7 21	
1324 0.5 15	25 0806 5.2 158		10 0752 5.1 155	25 0925 5.2 158		10 0607 5.7 174	25 0607 5.9 180	
1901 4.9 149	25 1511 -0.3 -9		10 1526 0.8 24	25 1647 0.2 6		10 1414 0.8 24	25 1526 0.5 15	
10 0219 0.2 6	25 2032 5.4 165		10 2009 4.6 140	25 2210 5.3 162		10 1853 5.1 155	25 1951 5.7 174	
0755 4.6 140	26 0336 -0.3 -9		11 0320 0.5 15	26 0455 0.4 12		11 0202 0.8 24	26 0321 0.9 27	
1416 0.6 18	26 0904 5.3 162		11 0832 5.2 158	26 1034 5.4 165		11 0704 5.9 177	26 0906 5.8 177	
1940 4.8 146	26 1610 -0.1 -3		11 1327 0.8 27	26 1746 0.3 9		11 1504 1.0 30	26 1422 0.6 18	
11 0256 0.3 9	26 2132 5.2 158		11 1827 0.9 27	26 2309 5.2 158		11 1942 5.0 152	26 2147 5.5 168	
0839 4.6 140	27 0429 -0.3 -9		12 0243 0.7 21	27 0552 0.5 15		12 0245 0.9 27	27 0426 1.0 30	
1508 0.7 21	27 1002 5.3 162		12 0923 5.2 158	27 1133 5.4 165		12 1602 1.1 34	27 1718 0.7 21	
2021 4.6 140	27 1710 -0.1 -3		12 1733 0.9 27	27 1843 0.3 9		12 2041 4.9 149	27 2245 5.5 168	
12 0334 0.4 12	28 0524 -0.2 -6		13 0230 0.7 21	28 0007 5.3 162		13 0941 1.0 30	28 0522 1.1 34	
0922 4.7 143	28 1101 5.3 162		13 0729 5.2 158	28 0648 0.5 15		13 0944 5.8 177	28 1104 5.6 171	
1559 0.8 24	28 1810 -0.1 -3		13 1427 0.8 27	28 1231 5.4 165		13 1705 1.1 34	28 1814 0.8 24	
2115 4.4 134	28 2330 5.0 152		13 1927 0.9 27	28 1938 0.2 6		13 2201 4.9 149	28 2342 5.6 171	
13 0416 0.4 12	29 0620 -0.1 -3		14 0631 0.7 21	29 0050 4.5 137		14 0453 1.1 34	29 0619 1.2 37	
1006 4.7 143	29 1159 5.3 162		14 1149 5.2 158	30 0050 4.5 137		14 0947 5.6 171	29 1102 6.6 171	
1701 0.8 24	29 1908 -0.1 -3		14 1627 0.8 27	30 0550 5.4 165		14 1808 1.1 34	29 1907 0.7 21	
2220 4.3 131	30 0028 5.0 152		15 0050 4.5 137	30 1256 5.4 165		14 2318 4.9 149	30 0037 5.7 174	
14 0507 0.5 15	30 0715 -0.1 -3		15 0736 0.5 15	30 2034 0.4 12		15 0607 1.1 34	30 0715 1.1 34	
1148 4.9 149	31 0123 5.1 155		15 1256 5.4 165			15 1110 5.6 171	30 1256 5.6 171	
1806 0.8 24	31 0808 -0.1 -3		15 1938 0.6 18			15 1909 0.9 27	30 1957 0.6 18	
2325 4.2 128	31 1347 5.4 165						31 0128 5.9 180	
15 0605 0.5 15	31 2037 -0.3 -9						31 0806 1.0 30	
1148 4.9 149							31 1346 5.7 174	
1908 0.7 21							31 2043 0.6 18	

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)

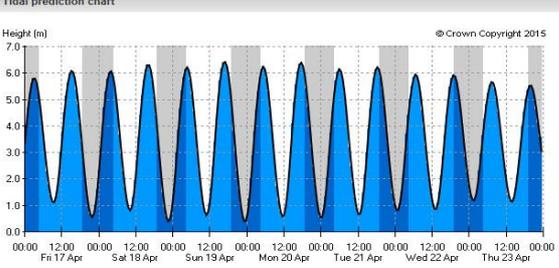
[View printer friendly prediction](#)

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

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

**Adjust chart time axis**

Daylight saving:

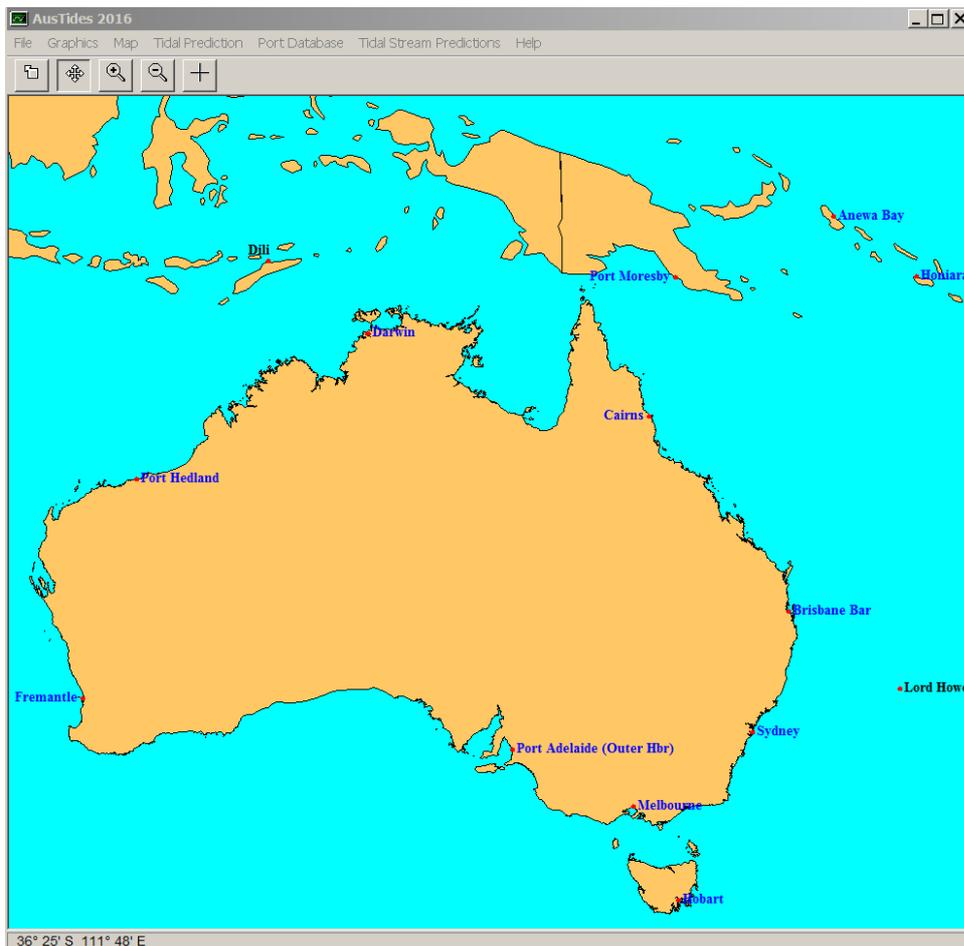
Max graph size:

**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.

# Australian Example

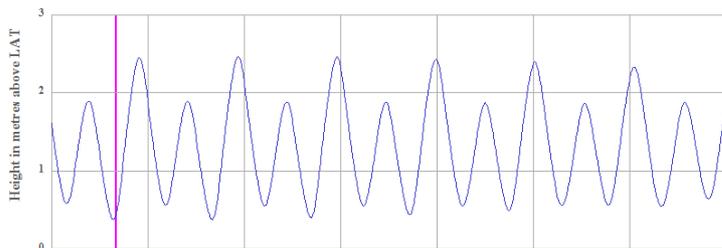


## BRISBANE BAR

Local Standard 27° 22' S 153° 10' E  
 Time Zone: -10:00 U.T.  
 PREDICTION DATUM below MSL: 1.31 (m)

Year 2016

Port 59980



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)

SHOM L'océan en référence

Distribution area | Harbor selection | Generate harbor widget | More details | EN | FR

### Tides tables

Select harbor

Close the map

© 2016 SHOM. Tous droits réservés. Mentions légales | A propos du SHOM | QSV | FAQ | Barèmes public | Contact | Twitter | Facebook

SHOM L'océan en référence

Distribution area | Harbor selection | Generate harbor widget | More details | EN | FR

### Tides tables

Select harbor

Show the map

Brest (France)

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

Tides tables

05/02/2018

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

8



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](mailto:cl-lc@iho.int) - Fax: +377 93 10 81 40*

Note: 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:**

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**Signature :**

**Date :**
