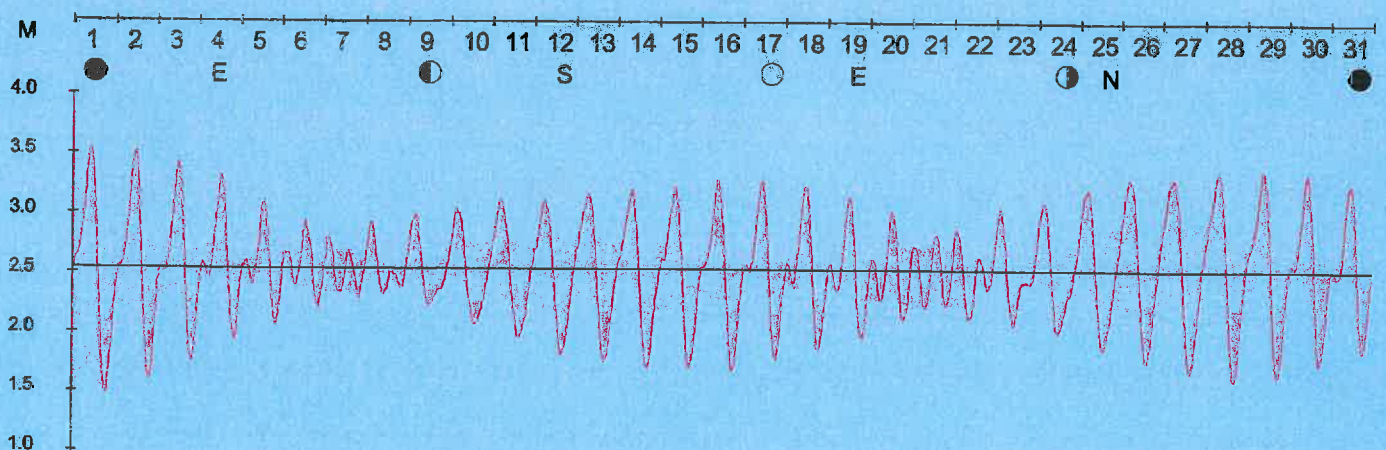


**JADUAL
RAMALAN AIR PASANG SURUT
(TIDE TABLES)
MALAYSIA
2016**



**Diterbitkan oleh
JABATAN UKUR DAN PEMETAAN
MALAYSIA**

PENDAHULUAN

Jabatan Ukur dan Pemetaan Malaysia menyediakan Jadual Ramalan Air Pasang Surut setiap tahun.

Jadual Ramalan Air Pasang Surut yang disediakan bagi dua puluh dua (22) stesen air pasang surut adalah menggunakan sejumlah 60 juzuk-juzuk pasang surut. Datum yang digunakan ialah Air Surut Perbani India.

Jadual ini memberikan maklumat-maklumat seperti berikut di setiap Stesen Air Pasang Surut:

- (i) Pemalar Harmonik
- (ii) Jadual Ketinggian Setiap Jam
- (iii) Jadual Masa dan ketinggian Air Pasang dan Air Surut
- (iv) Marigram Air Pasang Surut

PREFACE

The publication of the Tide Tables is made annually by the Department of Survey and Mapping Malaysia.

Tidal predictions are prepared for twenty-two (22) tide stations using 60 tidal constituents. The datum level adopted for tidal predictions is the Indian Spring Low Water (ISLW).

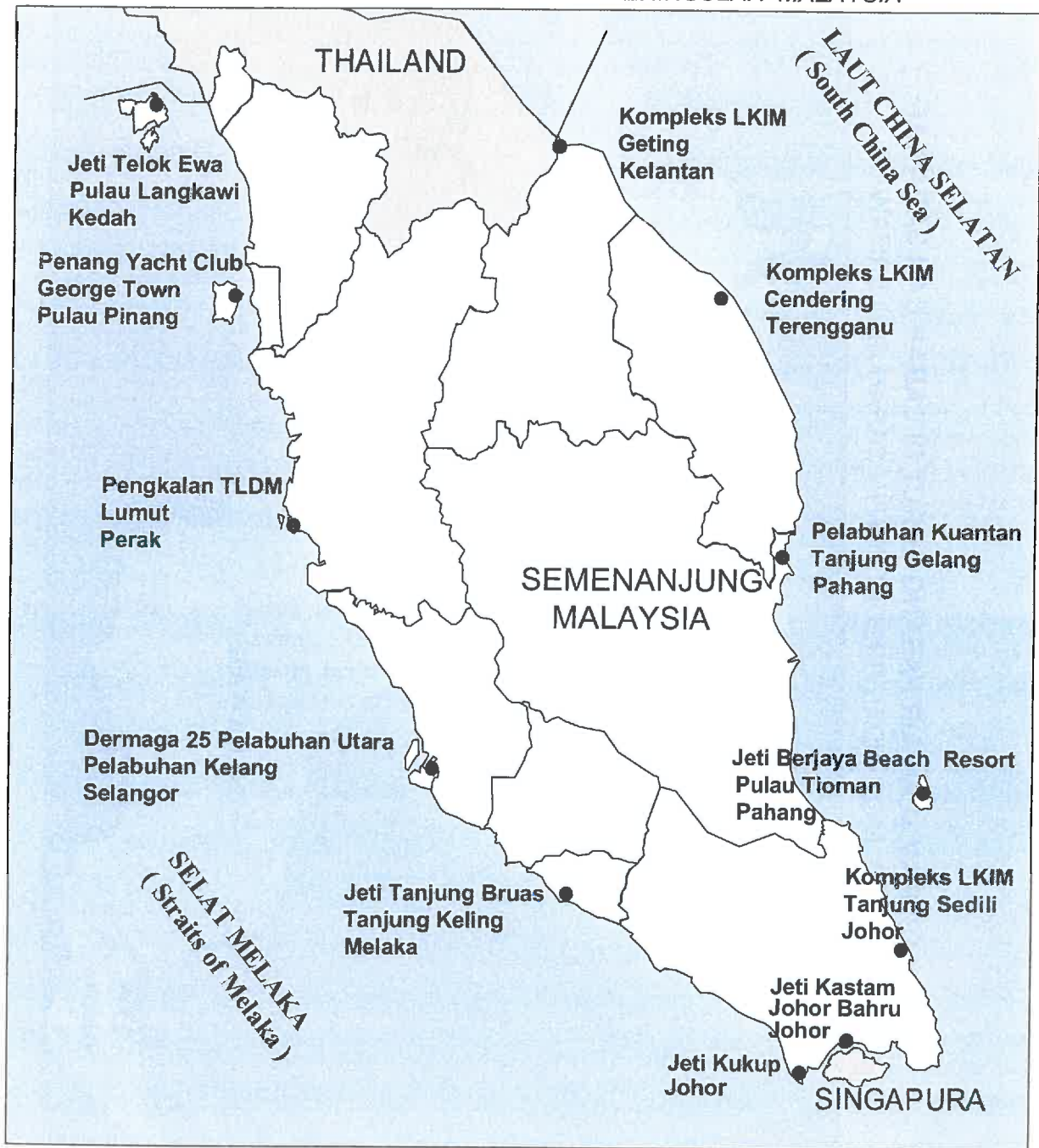
These Tide Tables provide the following information on each Tide Station:

- (i) *Harmonic Constants*
- (ii) *Table of Hourly Heights*
- (iii) *Table of Times and Heights of High and Low Waters*
- (iv) *Tidal Marigram*



(DATUK SR AHMAD FAUZI BIN NORDIN, PMW, DPMT, DSAP, JSM, SMZ, KMN)
Ketua Pengarah Ukur dan Pemetaan Malaysia
Director General of Survey and Mapping Malaysia

LOKASI RAMALAN AIR PASANG SURUT DI SEMENANJUNG MALAYSIA
LOCATION OF TIDAL PREDICTION IN PENINSULAR MALAYSIA



KETERANGAN

- 1.1 Waktu Piawai Malaysia yang digunakan untuk ramalan ialah 8 jam ke timur Greenwich.
- 1.2 Nilai-nilai yang bergaris di dalam "Hourly Heights Prediction" menunjukkan kedudukan air pasang dan air surut masing-masing.
- 1.3 Semua ketinggian adalah dalam sentimeter di atas Aras Datum.
- 1.4 Aras Datum yang digunakan ialah Air Surut Perbani India. Ianya adalah satu aras yang berkedudukan di bawah Aras Laut Min iaitu pada nilai yang sama dengan jumlah amplitud Juzuk-juzuk Harmonik M_2 , S_2 , K_1 dan O_1 .
- 1.5 Pasang Perbani : Ketinggian aras air pasang ketika air pasang perbani biasa di atas aras datum.
- Pasang Anak : Ketinggian aras air pasang ketika air pasang anak biasa di atas aras datum.
- Julat Perbani : Julat pasang surut ketika pasang surut perbani.
- Pasang Tropika : Ketinggian aras air pasang ketika pasang surut tropika biasa di atas aras datum.
- Pasang Khatulistiwa : Ketinggian aras air pasang dari aras datum ketika air pasang surut khatulistiwa.
- Julat Tropika : Julat air pasang surut min ketika air pasang surut tropika.

EXPLANATION

- 1.1 *The Malaysian Standard Time used for prediction is 8 hours east of Greenwich.*
- 1.2 *Underlined values in "Hourly Heights Prediction" denote high and low water respectively.*
- 1.3 *All heights are in centimeters above Datum Level.*
- 1.4 *The Datum Level adopted is that of Indian Spring Low Water. It is a level below Mean Sea Level and equals to the sum of the amplitude of the Harmonic Constituents M_2 , S_2 , K_1 and O_1 .*
- 1.5 *Spring Rise : Elevation of high water level of ordinary spring tide above the datum level.*
- Neap Rise : Elevation of high water level of ordinary neap tide above the datum level.*
- Spring Range : Mean range of tide at spring tide.*
- Tropic Rise : Elevation of high water level of ordinary tropic tide above the datum level.*
- Equatorial Rise : Elevation of high water level of ordinary equatorial tide above the datum level.*
- Tropic Range : Mean range of tide at tropic tide.*

Sela Air Pasang Min : Sela min di antara laluan meridian bulan dan air pasang yang berikut.

Mean High Water Interval : *The mean interval between the moon's meridian passage and the following high water*

1.6 Simbol-simbol dan singkatan-singkatan yang digunakan adalah seperti berikut:

1.6 *Symbols and abbreviations adopted in the publication are as follows:*

 : Bulan Baru
 : Suku Pertama
 : Bulan Penuh
 : Suku Terakhir

 : *New Moon*
 : *First Quarter*
 : *Full Moon*
 : *Last Quarter*

SU : Ahad

SU : *Sunday*

M : Isnin

M : *Monday*

TU : Selasa

TU : *Tuesday*

W : Rabu

W : *Wednesday*

TH : Khamis

TH : *Thursday*

F : Jumaat

F : *Friday*

SA : Sabtu

SA : *Saturday*

1.7 JUPEM – Jabatan Ukur dan Pemetaan Malaysia.

1.7 *JUPEM – Department of Survey and Mapping Malaysia.*

1.8 DTGSM – Datum Tegak Geodesi Semenanjung Malaysia.

1.8 *DTGSM – The Peninsular Malaysia Geodetic Vertical Datum.*

1.9 MSL – Aras Laut Min.

1.9 *MSL – Mean Sea Level.*

2.0 LSD – Datum Ukur Tanah.

2.0 *LSD – Land Survey Datum.*

2.1 TLDM – Tentera Laut DiRaja Malaysia.

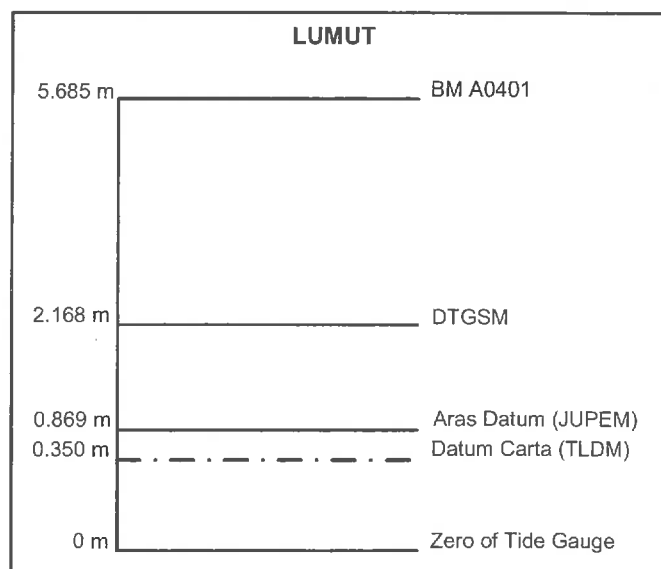
2.1 *TLDM – Royal Malaysian Navy.*

2.2 SMD – Jabatan Laut Sarawak.

2.2 *SMD – Sarawak Marine Department.*

LUMUT

- | | |
|--|---|
| <p>1. Kedudukan :</p> <p> Garislintang 04° 14' 24" U</p> <p> Garisbujur 100° 36' 48" T</p> | <p>1. Position :</p> <p> Latitude 04° 14' 24" N</p> <p> Longitude 100° 36' 48" E</p> |
| <p>2. Aras Datum :</p> <p> 4.816 meter di bawah Tanda Aras
 Jabatan Ukur dan Pemetaan
 Malaysia, A 0401.</p> | <p>2. Datum Level :</p> <p> 4.816 metres below the Department
 of Survey and Mapping Malaysia's
 Bench Mark, A 0401.</p> |
| <p>3. Datum Carta :</p> <p> 5.335 meter di bawah Tanda Aras
 Jabatan Ukur dan Pemetaan
 Malaysia, A 0401.</p> | <p>3. Chart Datum :</p> <p> 5.335 metres below the Department
 of Survey and Mapping Malaysia's
 Bench Mark, A 0401.</p> |
| <p>4. Jenis Air Pasang : Semiharian
 Surut</p> <p> Pasang Perbani 2.46 m</p> <p> Pasang Anak 1.77 m</p> <p> Julat Perbani 2.25 m</p> <p> Sela Air Pasang 02^h 49^m
 Min</p> | <p>4. Type of Tide : Semi-diurnal</p> <p> Spring Rise 2.46 m</p> <p> Neap Rise 1.77 m</p> <p> Spring Range 2.25 m</p> <p> Mean High Water
 Interval 02^h 49^m</p> |
| <p>5. Sisihan piawai :</p> <p> Masa teramal ± 8.1 min</p> <p> Ketinggian teramal ± 8.4 sm</p> | <p>5. Standard deviation :</p> <p> Predicted time ± 8.1 mins</p> <p> Predicted height ± 8.4 cm</p> |



HARMONIC CONSTANTS

STATION DESCRIPTION

COUNTRY	: MALAYSIA	LATITUDE	: 4°14' N
LOCATION	: LUMUT	LONGITUDE	: 100°37' E
STATE	: PERAK	LOCAL STD.TIME	: 8 HRS.EAS
H.C. NO.	: 60	Z0	: 1.342 M.

SYMBOL	H (CM)	K (DEG)	SYMBOL	H (CM)	K (DEG)
SA	5.0	158.1	M2	77.4	81.6
SSA	6.8	123.8	MKS2	0.2	117.3
MM	1.5	343.1	LAM2	1.3	67.8
MSF	1.5	239.8	L2	4.8	78.4
MF	1.1	333.7	T2	2.1	119.4
2Q1	0.4	189.4	S2	34.8	118.0
SIG1	1.4	274.3	R2	0.2	61.3
Q1	1.0	228.8	K2	7.3	98.5
RHO1	0.4	125.2	MSN2	0.5	276.4
O1	2.5	264.9	KJ2	0.3	308.4
MP1	2.7	358.1	2SM2	0.8	310.9
M1	0.6	200.7	MO3	0.5	48.4
CHI1	0.2	216.9	M3	0.2	209.1
PI1	0.4	64.7	SO3	0.2	112.7
P1	7.7	356.4	MK3	0.4	142.7
S1	2.4	139.1	SK3	0.3	214.6
K1	19.4	339.4	MN4	0.5	359.0
PSI1	0.5	137.9	M4	1.4	9.3
PHI1	0.5	349.4	SN4	0.2	29.0
THE1	0.3	323.2	MS4	1.5	47.6
J1	2.0	24.4	MK4	0.2	29.1
SO1	1.9	96.6	S4	0.3	82.1
OO1	1.1	1.8	SK4	0.1	45.1
OQ2	0.2	352.9	2MN6	0.2	297.1
MNS2	0.6	86.9	M6	0.4	308.6
2N2	2.3	60.6	MSN6	0.3	353.6
MU2	2.4	101.5	2MS6	1.0	348.1
N2	15.4	74.7	2MK6	0.1	330.9
NU2	3.1	73.0	2SM6	0.4	55.3
OP2	0.2	39.5	MSK6	0.1	32.1

Note: Harmonic analysis was carried out using 5 years (2009,2010,2011,2012 and 2013) observational data

LUMUT
Hourly Heights Prediction

MAY

2016

Table with columns DAY (0-23) and rows of numerical data for May 2016. Includes a vertical list of numbers on the far left margin.

JUNE

2016

Table with columns DAY (0-23) and rows of numerical data for June 2016.

LUMUT

2016

Times and Heights of High and Low Water

JANUARY

FEBRUARY

TIME HEIGHT		TIME HEIGHT		TIME HEIGHT		TIME HEIGHT		TIME HEIGHT		TIME HEIGHT		TIME HEIGHT			
H.M. (cm)		H.M. (cm)		H.M. (cm)		H.M. (cm)		H.M. (cm)		H.M. (cm)		H.M. (cm)			
1	2 14 78	9	3 27 236	17	3 18 69	25	4 47 242	1	2 58 75	9	4 28 248	17	5 36 69	25	5 30 226
F	7 52 188	SA	9 59 9	SU	9 4 183	M	11 14 -20	M	8 45 162	TU	10 55 -28	W	12 10 162	TH	11 46 -10
E	14 8 48	S	16 14 217	☉	15 20 54		17 35 231	☉	14 51 67		17 16 244		18 10 88	E	18 1 233
	20 45 210		22 6 47		22 0 210		23 32 34		21 30 185		23 16 18				
2	3 2 88	10	4 5 247	18	4 35 76	26	5 19 239	2	3 57 85	10	5 8 252	18	0 25 178	26	0 8 22
SA	8 39 170	SU	10 36 -6	M	10 30 167	TU	11 45 -18	TU	9 57 150	W	11 34 -35	TH	7 12 58	F	5 59 221
☉	14 49 66	●	16 53 227		16 39 74		18 6 231		16 0 84		17 54 252	N	13 40 177		12 12 -2
	21 35 200		22 48 39		23 21 201				22 39 173		23 56 13		19 43 77		18 28 231
3	4 6 96	11	4 42 254	19	6 12 71	27	0 2 35	3	5 38 87	11	5 49 250	19	1 45 188	27	0 36 25
SU	9 38 155	M	11 12 -17	TU	12 24 167	W	5 50 232	W	11 52 148	TH	12 11 -32	F	8 17 39	SA	6 27 212
	15 45 83		17 32 235		18 20 81		12 13 -11		17 39 92	E	18 34 253		14 43 196		12 40 9
	22 42 193		23 28 37				18 32 229						20 45 61		18 54 225
4	5 45 95	12	5 19 255	20	0 46 202	28	0 34 38	4	0 22 175	12	0 38 16	20	2 39 201	28	1 5 32
M	11 22 150	TU	11 49 -21	W	7 34 53	TH	6 20 222	TH	7 8 75	F	6 30 239	SA	9 5 20	SU	6 59 200
	17 10 93		18 9 241		13 52 182		12 40 -1		13 30 161		12 49 -20		15 27 211		13 6 24
					19 47 74		19 0 226		19 19 83		19 10 247		21 30 47		19 22 215
5	0 3 192	13	0 6 36	21	1 53 211	29	1 3 44	5	1 34 187	13	1 19 22	21	3 21 213		
TU	7 3 83	W	5 57 251	TH	8 33 32	F	6 50 209	F	8 10 55	SA	7 10 223	SU	9 46 3		
	13 6 159		12 26 -17		14 53 199	E	13 6 13	S	14 26 180		13 28 1		16 6 222		
	18 46 91		18 51 243		20 50 61		19 30 220		20 22 69		19 51 235		22 8 36		
6	1 15 199	14	0 50 40	22	2 49 222	30	1 35 52	6	2 23 204	14	2 2 34	22	3 56 223		
W	8 0 66	TH	6 38 240	F	9 21 11	SA	7 21 194	SA	8 56 31	SU	7 57 204	M	10 20 -8		
	14 9 175		13 3 -8	N	15 41 214		13 35 29		15 12 199		14 9 26		16 39 229		
	19 54 81		19 30 241		21 39 49		20 1 211		21 9 53		20 33 218		22 41 27		
7	2 5 211	15	1 34 47	23	3 32 233	31	2 11 63	7	3 7 222	15	2 53 50	23	4 30 228		
TH	8 44 46	F	7 20 223	SA	10 4 -5	SU	7 57 179	SU	9 38 7	M	8 51 182	TU	10 51 -13		
	14 53 191	E	13 42 9		16 25 224		14 7 48		15 55 217	☉	15 0 54	☉	17 8 232		
	20 45 68		20 11 234		22 21 41		20 38 198		21 55 38		21 23 198		23 11 24		
8	2 48 223	16	2 22 58	24	4 10 239			8	3 48 238	16	4 0 64	24	5 0 230		
F	9 22 27	SA	8 6 203	SU	10 42 -17			M	10 17 -13	TU	10 10 165	W	11 19 -14		
	15 36 205		14 25 30	☉	17 1 230			●	16 35 232		16 14 79		17 36 234		
	21 27 57		21 1 223		22 57 36				22 37 25		22 45 181		23 41 21		

LUMUT

2016

Times and Heights of High and Low Water

MARCH

APRIL

	TIME HEIGHT H.M. (cm)	TIME HEIGHT H.M. (cm)	TIME HEIGHT H.M. (cm)	TIME HEIGHT H.M. (cm)	TIME HEIGHT H.M. (cm)	TIME HEIGHT H.M. (cm)	TIME HEIGHT H.M. (cm)	TIME HEIGHT H.M. (cm)	TIME HEIGHT H.M. (cm)
1	1 38 42	9 3 30 230	17 3 30 56	25 4 41 223	1 2 22 61	9 4 42 248	17 5 41 78	25 5 23 223	
TU	7 33 188	W 9 53 -10	TH 10 0 173	F 10 51 4	F 8 39 180	SA 10 52 -10	SU 12 35 195	M 11 23 33	
	13 40 41	● 16 12 246	16 3 88	17 3 241	14 47 83	17 6 275	19 8 91	17 28 248	
	19 55 202	22 19 16	22 12 172	23 16 16	20 50 180	23 25 -9		23 49 16	
2	2 11 56	10 4 11 244	18 4 57 69	26 5 9 223	2 3 20 74	10 5 26 249	18 0 52 167	26 5 55 220	
W	8 10 174	TH 10 34 -26	F 11 50 170	SA 11 18 6	SA 9 54 174	SU 11 35 -5	M 7 0 74	TU 11 53 39	
○ 14 19 60		E 16 52 259	18 0 94	17 30 241	16 10 97	17 46 272	13 38 208	17 56 243	
20 34 186		23 1 3		23 45 14	22 12 169		20 8 74		
3	2 58 70	11 4 54 250	19 0 0 165	27 5 39 221	3 4 48 81	11 0 5 -10	19 1 53 179	27 0 19 21	
TH	9 5 162	F 11 13 -31	SA 6 35 67	SU 11 46 11	SU 11 42 179	M 6 12 243	TU 7 57 63	W 6 27 215	
S	15 12 79	17 33 265	13 16 183	17 55 239	18 3 95	12 16 10	E 14 20 221	S 12 25 49	
21 35 171		23 42 -3	19 35 82			18 26 261	20 48 59	18 27 235	
4	4 6 82	12 5 37 248	20 1 25 173	28 0 11 16	4 0 0 171	12 0 46 -3	20 2 40 193	28 0 49 29	
F	10 30 154	SA 11 53 -27	SU 7 48 54	M 6 9 215	M 6 25 71	TU 6 58 231	W 8 41 51	TH 6 59 211	
16 45 93		18 9 263	14 18 200	12 13 20	13 4 198	N 12 58 30	14 59 232	12 59 60	
23 13 163			20 30 65	18 22 234	19 30 78	19 3 244	21 25 45	18 59 225	
5	5 57 81	13 0 22 -2	21 2 22 187	29 0 40 22	5 1 18 188	13 1 26 12	21 3 15 205	29 1 22 40	
SA	12 30 162	SU 6 20 240	M 8 36 38	TU 6 40 207	TU 7 39 50	W 7 45 217	TH 9 17 41	F 7 39 206	
18 42 89		12 33 -13	15 0 215	12 43 33	14 8 221	13 42 54	15 33 240	13 39 74	
		18 47 255	21 14 49	18 52 225	20 30 57	19 46 222	21 55 33	19 39 211	
6	0 50 173	14 1 2 5	22 3 3 201	30 1 8 33	6 2 17 208	14 2 11 32	22 3 48 214	30 2 2 54	
SU	7 21 63	M 7 3 225	TU 9 16 24	W 7 12 198	W 8 37 26	TH 8 37 201	F 9 51 33	SA 8 26 202	
13 48 182		13 11 9	15 38 227	13 16 48	E 14 58 243	● 14 36 78	○ 16 1 245	● 14 34 88	
19 58 72		19 25 238	21 49 37	19 21 212	21 17 34	20 34 198	22 23 25	20 26 195	
7	1 55 192	15 1 44 19	23 3 40 212	31 1 43 45	7 3 8 227	15 3 3 53	23 4 22 221		
M	8 23 39	TU 7 50 207	W 9 52 13	TH 7 49 189	TH 9 24 7	F 9 45 189	SA 10 23 30		
14 43 206		13 54 36	E 16 7 234	● 13 53 65	● 15 43 260	15 46 97	16 32 248		
20 51 52		20 7 217	○ 22 19 28	S 19 58 197	22 0 14	21 36 175	22 52 18		
8	2 46 213	16 2 30 37	24 4 10 219		8 3 56 241	16 4 12 71	24 4 52 223		
TU	9 9 13	W 8 44 188	TH 10 23 7		F 10 9 -6	SA 11 14 187	SU 10 53 30		
15 28 228		N 14 47 65	16 37 239		16 26 272	17 30 102	16 59 249		
21 38 33		● 20 57 194	22 49 20		22 44 -2	23 17 163	23 20 15		

LUMUT

2016

Times and Heights of High and Low Water

MAY

JUNE

EIGHT (cm)	TIME HEIGHT		TIME HEIGHT		TIME HEIGHT		TIME HEIGHT		TIME HEIGHT		TIME HEIGHT		TIME HEIGHT	
	H.M. (cm)		H.M. (cm)		H.M. (cm)		H.M. (cm)		H.M. (cm)		H.M. (cm)		H.M. (cm)	
223	1 2 52 67	9 5 16 249	17 5 52 89	25 5 43 224	1 4 54 74	9 0 14 -5	17 1 21 177	25 0 22 12						
33	SU 9 35 198	M 11 18 23	TU 12 43 212	W 11 36 53	W 11 43 226	TH 6 39 241	F 7 9 89	SA 6 44 232						
248	15 48 100	17 24 273	E 19 25 86	17 35 250	18 21 86	12 32 56	13 34 218	12 40 59						
16	21 39 182	23 50 -11				18 25 248	20 13 67	18 30 242						
20	2 4 7 76	10 6 4 245	18 1 10 173	26 0 2 18	2 0 7 189	10 0 54 6	18 2 17 190	26 0 58 18						
39	M 10 58 203	TU 12 1 33	W 7 2 85	TH 6 16 223	TH 6 18 71	F 7 20 233	SA 8 5 80	SU 7 22 232						
43	17 30 100	N 18 3 263	13 34 221	12 11 59	12 53 237	13 14 67	14 19 225	13 22 67						
	23 14 178		20 12 71	18 8 245	19 33 66	19 2 232	20 54 53	19 10 230						
1	3 5 35 75	11 0 32 -4	19 2 6 186	27 0 36 24	3 1 26 203	11 1 30 24	19 3 0 202	27 1 39 28						
5	TU 12 21 216	W 6 50 237	TH 7 57 75	F 6 52 222	F 7 30 62	SA 8 1 226	SU 8 53 71	M 8 5 232						
3	18 56 84	12 47 48	14 17 230	12 48 66	13 55 250	13 57 79	14 57 233	E 14 10 75						
5		18 45 248	20 52 56	18 43 236	20 30 43	19 44 213	21 30 39	19 55 215						
	4 0 39 189	12 1 12 10	20 2 49 199	28 1 9 33	4 2 30 218	12 2 7 43	20 3 39 212	28 2 20 42						
	W 6 55 62	TH 7 35 227	F 8 41 65	SA 7 33 221	SA 8 35 51	SU 8 44 219	M 9 33 63	TU 8 56 229						
	E 13 27 235	13 32 66	14 54 237	13 33 76	14 47 261	● 14 48 91	○ 15 35 241	● 15 7 83						
	20 0 62	19 24 228	21 25 43	19 21 223	21 20 21	20 26 192	22 5 27	20 53 200						
	5 1 50 206	13 1 53 29	21 3 27 210	29 1 50 44	5 3 27 232	13 2 47 62	21 4 16 219	29 3 14 57						
	TH 8 0 45	F 8 24 217	SA 9 21 58	SU 8 17 220	SU 9 30 43	M 9 30 212	TU 10 8 59	W 9 55 224						
	14 24 253	14 21 84	15 27 243	● 14 24 87	● 15 36 268	E 15 48 99	S 16 8 247	16 19 87						
	20 54 38	20 9 205	21 57 32	20 9 208	22 7 4	21 25 175	22 40 17	22 6 188						
	6 2 48 224	14 2 36 51	22 4 0 218	30 2 39 56	6 4 18 242	14 3 35 79	22 4 53 223	30 4 22 71						
	F 8 56 30	SA 9 19 208	SU 9 55 52	M 9 15 218	M 10 18 40	TU 10 26 208	W 10 45 55	TH 11 6 222						
	15 13 267	● 15 22 98	○ 16 0 248	15 26 95	N 16 21 271	17 6 101	16 43 252	17 46 83						
	21 39 17	21 2 184	22 30 24	21 11 194	22 52 -7	22 43 164	23 13 11							
	7 3 39 239	15 3 30 70	23 4 35 222	31 3 37 67	7 5 7 246	15 4 36 91	23 5 27 226							
	SA 9 47 19	SU 10 25 203	M 10 30 50	TU 10 22 220	TU 11 4 41	W 11 35 207	TH 11 23 55							
	● 15 58 276	16 48 105	16 32 251	E 16 53 97	17 2 269	18 25 94	17 16 253							
	22 25 1	22 18 168	23 0 18	22 35 186	23 35 -10		23 47 9							
	8 4 30 246	16 4 35 84	24 5 8 224		8 5 55 245	16 0 12 166	24 6 5 229							
	SU 10 33 17	M 11 35 204	TU 11 2 50		W 11 50 47	TH 6 0 94	F 11 59 56							
	16 41 279	18 18 100	S 17 2 252		17 44 261	12 39 211	17 53 250							
	23 7 -9	23 54 165	23 30 16			19 25 82								

LUMUT

2016

Times and Heights of High and Low Water

JULY

AUGUST

TIME HEIGHT		TIME HEIGHT		TIME HEIGHT		TIME HEIGHT		TIME HEIGHT		TIME HEIGHT		TIME HEIGHT			
H.M. (cm)		H.M. (cm)		H.M. (cm)		H.M. (cm)		H.M. (cm)		H.M. (cm)		H.M. (cm)			
1	5 49 77	9	0 30 1	17	1 43 180	25	0 44 2	1	2 16 205	9	1 0 24	17	2 49 206	25	1 47 33
F	12 22 225	SA	6 55 235	SU	7 34 87	M	7 6 243	M	8 18 68	TU	7 19 226	W	8 53 63	TH	8 5 228
	19 7 67		12 52 56		13 46 205	E	13 8 48		14 21 222		13 27 54		14 50 219	☉	14 22 50
			18 40 232		20 19 61		18 59 233		20 51 28		19 18 204		21 15 30		20 27 203
2	1 9 194	10	1 3 15	18	2 34 194	26	1 21 15	2	3 12 220	10	1 30 40	18	3 30 222	26	2 36 58
SA	7 11 74	SU	7 30 230	M	8 30 76	TU	7 47 239	TU	9 13 55	W	7 50 217	TH	9 37 49	F	8 55 210
	13 33 233		13 28 64	S	14 30 217		13 54 56		15 9 234		14 1 64	☉	15 30 235		15 20 65
	20 9 46		19 14 217		21 3 44		19 44 218		21 38 10		19 57 190		21 55 11		21 35 187
3	2 20 210	11	1 32 31	19	3 17 206	27	2 4 32	3	3 59 233	11	2 3 57	19	4 9 235	27	3 44 82
SU	8 21 64	M	8 1 223	TU	9 12 66	W	8 30 230	W	10 0 45	TH	8 23 204	F	10 13 37	SA	10 4 192
	14 30 242	E	14 6 74		15 10 229	☉	14 46 66	●	15 53 243	☉	14 42 76		16 8 247	N	16 41 75
	21 5 25		19 52 199		21 42 28		20 39 201		22 21 -3		20 39 176		22 33 -3		23 18 180
4	3 17 225	12	2 4 49	20	3 56 216	28	2 55 52	4	4 41 239	12	2 46 76	20	4 48 246	28	5 30 93
M	9 18 55	TU	8 37 215	W	9 52 56	TH	9 23 218	TH	10 41 38	F	9 15 189	SA	10 54 28	SU	11 45 184
●	15 20 251	☉	14 50 84	☉	15 48 241		15 49 76		16 34 248		15 40 87		16 47 254		18 21 71
N	21 54 6		20 34 182		22 19 14		21 47 185		22 58 -9		21 45 164		23 10 -12		
5	4 11 235	13	2 44 66	21	4 35 225	29	4 0 72	5	5 18 241	13	3 54 92	21	5 28 253	29	0 58 191
TU	10 7 48	W	9 22 206	TH	10 32 49	F	10 34 207	F	11 18 37	SA	10 24 178	SU	11 33 22	M	7 9 85
	16 5 257		15 45 92		16 25 249		17 13 78		17 8 246		17 4 94	E	17 26 254		13 10 192
	22 38 -6		21 35 168		22 55 2		23 21 180		23 33 -7		23 30 163		23 47 -12		19 40 56
6	4 57 241	14	3 35 83	22	5 11 232	30	5 35 84	6	5 51 240	14	5 37 98	22	6 5 256	30	2 5 209
W	10 52 45	TH	10 25 197	F	11 8 44	SA	12 0 204	SA	11 52 37	SU	12 0 176	M	12 12 22	TU	8 17 68
	16 47 259		17 3 95		17 1 253		18 45 68		17 41 240	S	18 37 87		18 6 247		14 11 206
	23 18 -10		23 0 161		23 32 -4										20 35 37
7	5 41 242	15	4 52 95	23	5 48 238	31	1 2 189	7	0 3 -1	15	1 3 174	23	0 26 -3	31	2 57 225
TH	11 35 45	F	11 36 193	SA	11 48 41	SU	7 6 81	SU	6 21 238	M	7 5 91	TU	6 44 253	W	9 6 52
	17 26 254		18 30 90		17 40 253	N	13 19 211	E	12 26 41		13 16 186		12 53 27		15 0 220
	23 56 -9						19 54 49		18 13 231		19 45 70		18 49 236		21 19 21
8	6 19 240	16	0 36 167	24	0 6 -4			8	0 34 10	16	2 2 190	24	1 4 12		
F	12 13 50	SA	6 24 95	SU	6 28 242			M	6 51 233	TU	8 6 78	W	7 21 244		
	18 4 245		12 51 197		12 30 44				12 55 45		14 7 202		13 36 37		
			19 34 77		18 18 245				18 47 219		20 33 51		19 33 220		

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2016

Times and Heights of High and Low Water

SEPTEMBER

OCTOBER

SEPTEMBER			OCTOBER				
TIME HEIGHT	TIME HEIGHT	TIME HEIGHT	TIME HEIGHT	TIME HEIGHT	TIME HEIGHT	TIME HEIGHT	TIME HEIGHT
H.M. (cm)	H.M. (cm)	H.M. (cm)	H.M. (cm)	H.M. (cm)	H.M. (cm)	H.M. (cm)	H.M. (cm)
1 3 40 236	9 1 33 58	17 3 42 251	25 3 39 94	1 3 44 250	9 1 43 81	17 3 53 278	25 5 8 107
TH 9 49 39	F 7 39 207	SA 9 56 27	SU 9 35 183	SA 10 3 28	SU 7 38 199	M 10 17 6	TU 10 43 168
● 15 42 231	● 13 55 61	E 15 50 245	16 10 75	E 15 58 230	● 13 58 66	16 19 253	17 3 85
21 59 9	20 6 188	○ 22 7 2	23 10 191	● 22 4 25	20 25 194	22 26 11	
2 4 16 243	10 2 9 76	18 4 21 264	26 5 30 102	2 4 14 253	10 2 35 98	18 4 35 283	26 0 7 211
F 10 24 32	SA 8 18 191	SU 10 38 13	M 11 23 172	SU 10 34 21	M 8 25 182	TU 10 58 -5	W 6 50 95
16 16 238	14 38 76	16 32 254	17 52 79	16 32 234	14 48 82	17 3 258	12 30 170
22 35 3	20 57 177	22 48 -7		22 37 23	21 36 189	23 7 13	18 30 84
3 4 48 246	11 3 7 93	19 5 1 270	27 0 40 202	3 4 43 254	11 3 57 109	19 5 16 280	27 1 11 223
SA 10 56 26	SU 9 18 173	M 11 15 6	TU 7 9 89	M 11 1 17	TU 9 43 168	W 11 39 -8	TH 7 50 77
E 16 49 239	S 15 37 90	17 13 256	13 2 180	17 0 234	16 6 93	17 49 256	13 43 184
23 5 3	22 17 171	23 28 -5	19 11 69	23 4 25	23 12 192	23 51 23	19 34 76
4 5 18 245	12 4 45 104	20 5 41 271	28 1 45 218	4 5 9 251	12 5 50 106	20 5 55 271	28 1 58 235
SU 11 28 25	M 10 52 165	TU 11 56 4	W 8 10 70	TU 11 30 16	W 11 37 169	TH 12 20 -3	F 8 35 58
17 19 236	17 21 95	17 56 252	14 2 195	17 30 231	17 48 90	18 34 247	E 14 30 198
23 35 7			20 9 55	23 34 31			20 21 66
5 5 47 244	13 0 10 178	21 0 7 5	29 2 33 232	5 5 37 248	13 0 35 208	21 0 35 40	29 2 38 244
M 11 56 25	TU 6 36 98	W 6 19 262	TH 8 55 52	W 11 56 19	TH 7 12 89	F 6 36 254	SA 9 9 43
17 50 230	12 35 173	12 37 9	14 49 210	18 0 226	13 2 184	N 13 2 10	15 6 211
	18 52 83	18 42 241	20 53 41		19 9 74	19 22 235	21 0 55
6 0 1 16	14 1 25 195	22 0 49 22	30 3 10 243	6 0 0 40	14 1 40 229	22 1 21 61	30 3 12 251
TU 6 11 238	W 7 43 81	TH 6 58 249	F 9 32 38	TH 6 2 241	F 8 9 66	SA 7 19 232	SU 9 42 31
12 26 30	13 38 191	13 16 21	15 25 222	12 23 26	13 58 205	13 46 28	15 40 221
18 20 221	19 55 62	19 27 226	21 32 31	18 32 220	20 5 52	20 16 222	21 36 48
7 0 30 28	15 2 16 216	23 1 34 46		7 0 32 51	15 2 27 249	23 2 14 83	31 3 42 255
W 6 38 232	TH 8 35 62	F 7 40 229		F 6 30 230	SA 8 54 43	SU 8 5 207	M 10 10 22
12 53 37	14 27 211	● 14 2 38		12 53 36	E 14 48 227	● 14 33 51	● 16 11 228
18 52 211	20 42 39	20 21 210		19 3 211	20 56 32	21 19 210	22 8 45
8 0 58 41	16 3 0 235	24 2 24 72		8 1 4 66	16 3 12 266	24 3 26 102	
TH 7 7 221	F 9 16 44	SA 8 30 205		SA 7 2 216	SU 9 36 22	M 9 10 183	
13 22 48	15 9 230	N 14 57 58		S 13 21 50	○ 15 32 243	15 39 72	
19 27 200	21 28 18	21 30 196		19 41 203	21 41 17	22 45 205	

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2016

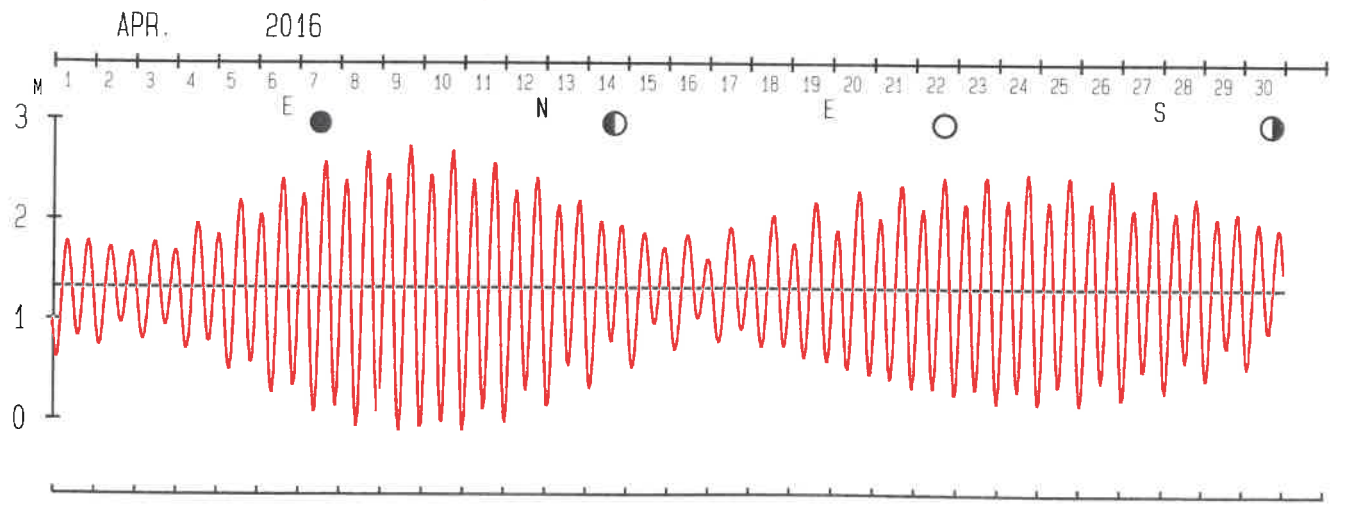
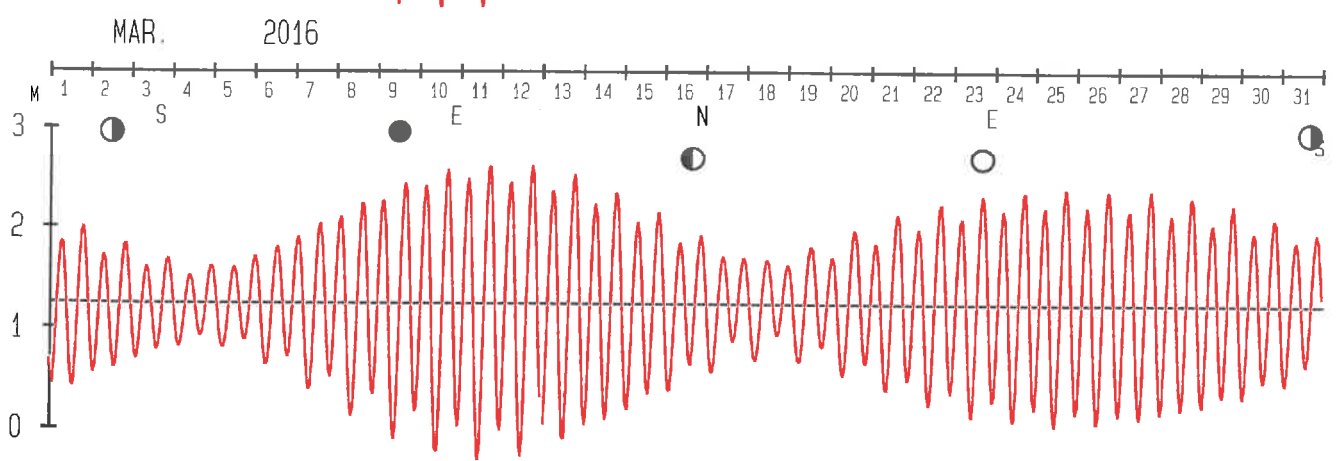
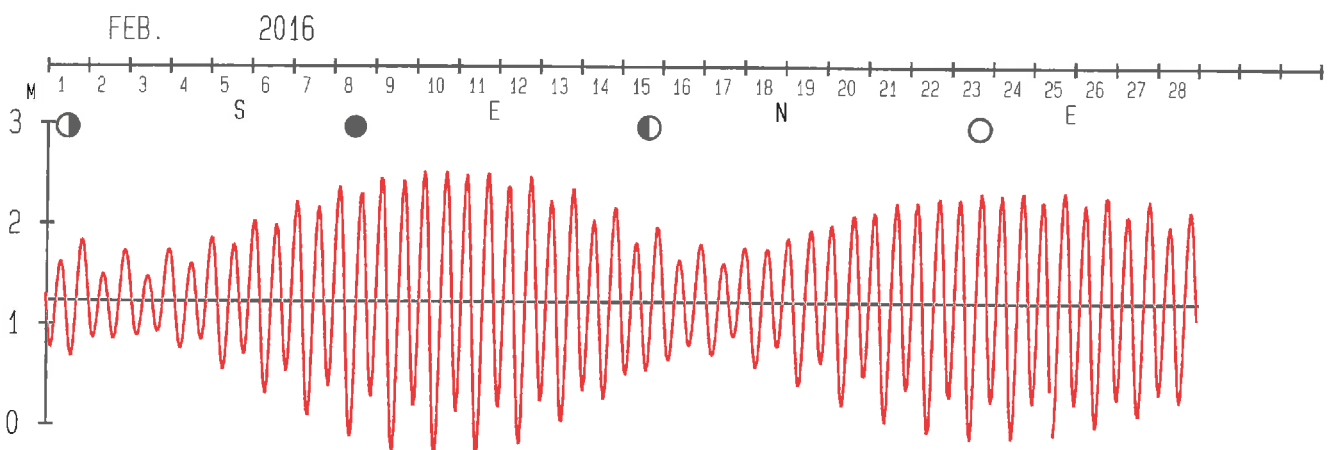
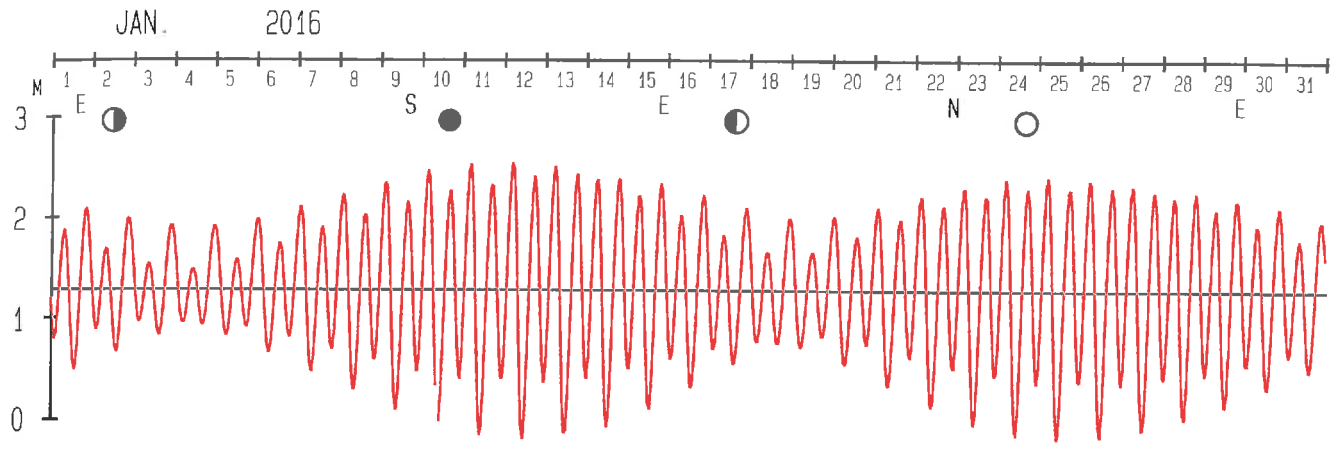
Times and Heights of High and Low Water

NOVEMBER

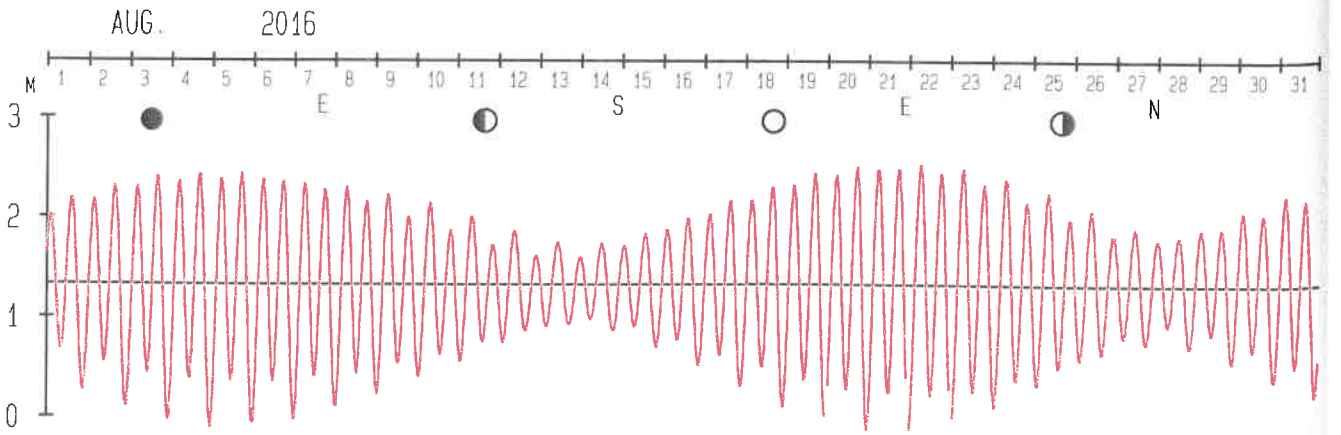
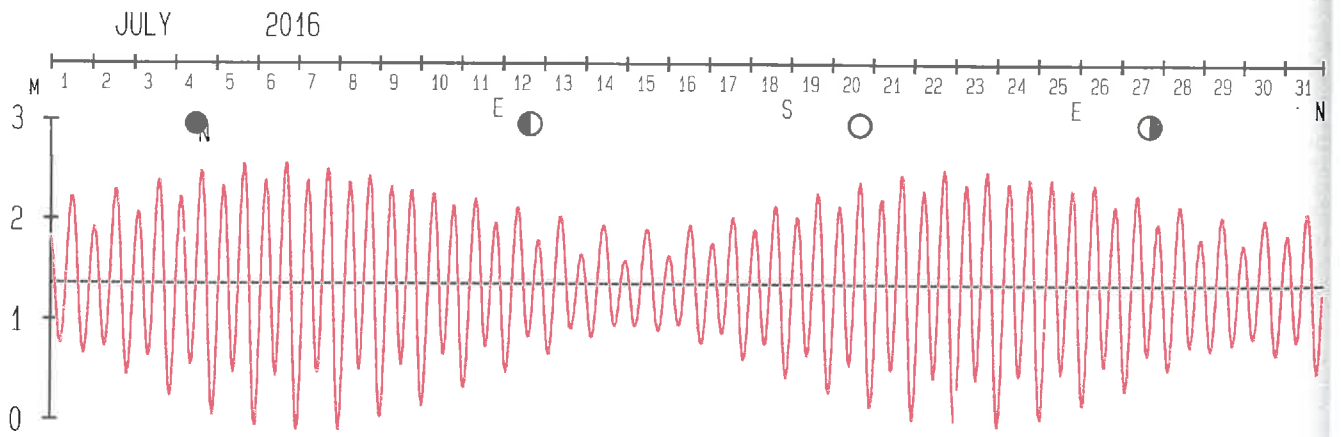
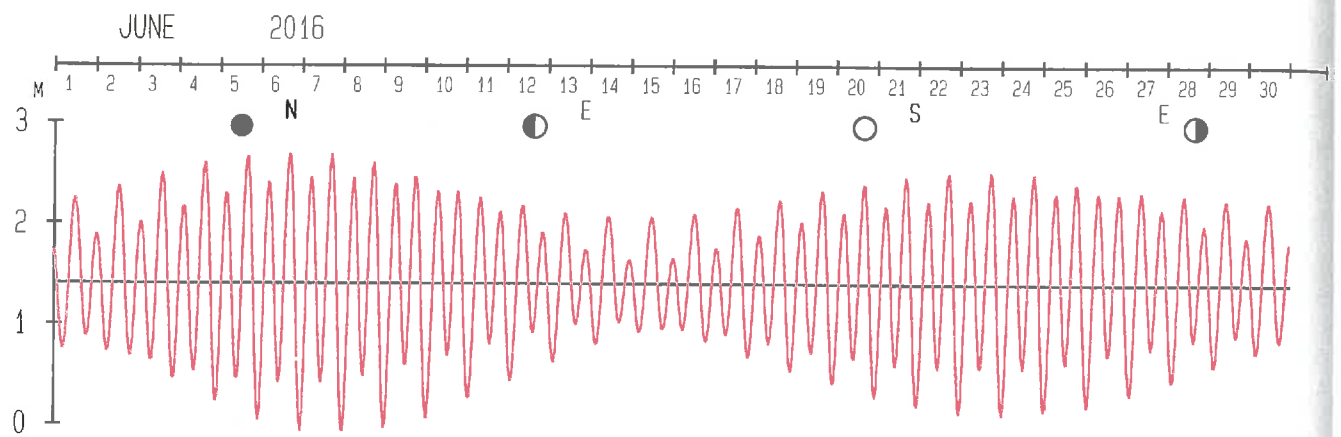
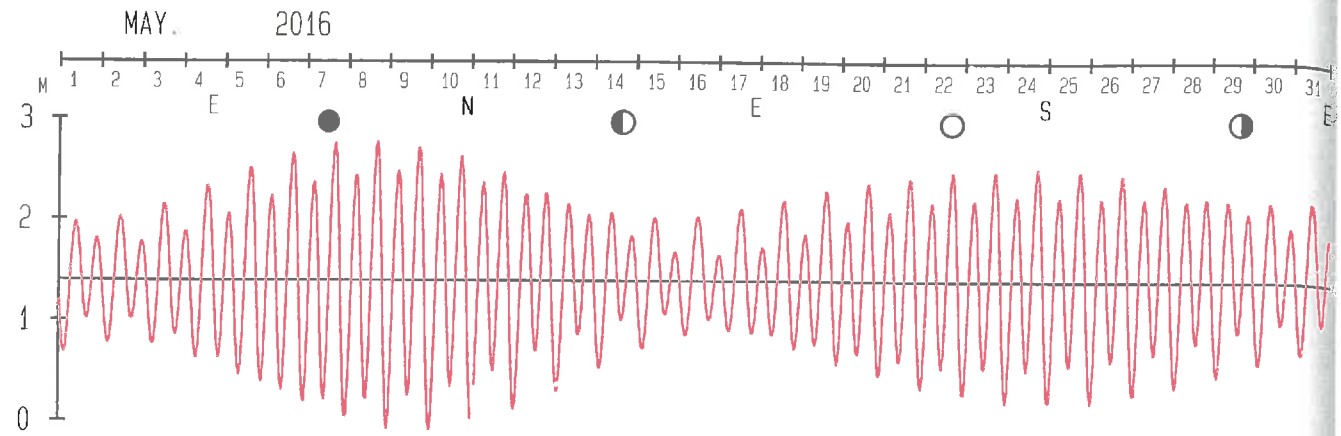
DECEMBER

NOVEMBER			DECEMBER				
TIME HEIGHT	TIME HEIGHT	TIME HEIGHT	TIME HEIGHT	TIME HEIGHT	TIME HEIGHT	TIME HEIGHT	TIME HEIGHT
H.M. (cm)	H.M. (cm)	H.M. (cm)	H.M. (cm)	H.M. (cm)	H.M. (cm)	H.M. (cm)	H.M. (cm)
1 4 9 257	9 3 21 108	17 4 54 281	25 0 17 218	1 4 16 253	9 4 12 101	17 5 22 267	25 0 20 204
TU 10 38 16	W 8 57 180	TH 11 25 -15	F 7 15 87	TH 10 47 10	F 9 45 177	SA 11 55 -23	SU 7 20 79
16 42 231	15 21 81	N 17 42 254	13 0 169	17 0 226	E 16 4 74	18 19 247	13 14 163
22 38 44	22 25 208	23 39 38	18 40 91	22 49 55	23 0 220		18 53 91
2 4 39 257	10 5 0 109	18 5 38 272	26 1 15 226	2 4 46 254	10 5 45 94	18 0 13 47	26 1 18 210
W 11 5 13	TH 10 36 172	F 12 6 -12	SA 8 2 69	F 11 16 8	SA 11 20 175	SU 6 3 255	M 8 10 64
17 14 231	16 50 87	18 30 249	14 0 182	S 17 30 226	17 30 77	12 34 -13	14 13 177
23 7 47	23 48 219		19 41 83	23 22 57		19 3 242	19 56 82
3 5 6 254	11 6 30 94	19 0 24 51	27 2 0 233	3 5 15 251	11 0 18 229	19 0 57 57	27 2 9 217
TH 11 34 13	F 12 14 179	SA 6 17 257	SU 8 42 53	SA 11 47 9	SU 7 5 74	M 6 43 239	TU 8 50 47
17 44 229	E 18 17 79	12 48 -1	14 43 197	18 4 225	12 56 186	13 11 2	14 56 192
23 39 53		19 16 241	20 30 74	23 54 61	18 55 71	19 45 234	20 43 72
4 5 35 248	12 0 58 236	20 1 11 67	28 2 39 240	4 5 47 246	12 1 23 241	20 1 42 70	28 2 48 225
F 12 2 18	SA 7 39 71	SU 7 0 237	M 9 15 38	SU 12 16 15	M 8 4 49	TU 7 21 217	W 9 25 32
S 18 14 225	13 26 198	13 30 18	15 19 209	18 35 224	14 7 204	13 48 24	15 33 204
	19 30 64	20 5 231	21 8 65		20 3 59	20 24 225	21 24 63
5 0 8 61	13 1 55 254	21 2 3 84	29 3 12 246	5 0 32 67	13 2 19 254	21 2 27 82	29 3 24 234
SA 6 3 240	SU 8 30 46	M 7 45 214	TU 9 48 26	M 6 17 237	TU 8 57 24	W 8 3 195	TH 9 57 18
12 30 28	14 27 218	● 14 12 40	● 15 55 218	12 49 24	15 4 223	E 14 27 46	S 16 11 212
18 47 219	20 27 48	21 0 221	21 44 59	19 12 222	21 2 48	● 21 11 215	● 22 0 56
6 0 45 71	14 2 42 269	22 3 3 98	30 3 46 251	6 1 8 76	14 3 9 265	22 3 26 93	30 3 57 241
SU 6 35 228	M 9 15 22	TU 8 39 189	W 10 17 17	TU 6 53 224	W 9 45 2	TH 8 55 173	F 10 30 8
13 1 39	○ 15 16 236	15 4 63	16 27 223	13 22 36	○ 15 58 237	15 8 67	16 47 219
19 21 215	21 19 36	22 0 214	22 17 56	19 52 221	21 54 40	22 5 207	22 36 52
7 1 21 84	15 3 28 279	23 4 25 106		7 1 56 86	15 3 55 271	23 4 41 97	31 4 30 246
M 7 10 213	TU 9 59 3	W 9 48 169		W 7 36 208	TH 10 30 -14	F 10 10 157	SA 11 1 0
13 36 53	16 6 248	16 5 82		● 14 1 48	N 16 48 247	16 6 85	17 18 222
20 6 210	22 6 29	23 14 212		20 41 219	22 43 37	23 10 203	
8 2 11 97	16 4 12 284	24 6 0 101		8 2 55 96	16 4 41 273	24 6 10 93	
TU 7 54 196	W 10 42 -11	TH 11 30 162		TH 8 26 191	F 11 13 -23	SA 11 52 153	
● 14 19 68	16 53 255	E 17 24 92		14 53 62	17 36 249	17 30 94	
21 4 207	22 53 30			21 43 218	23 30 40		

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