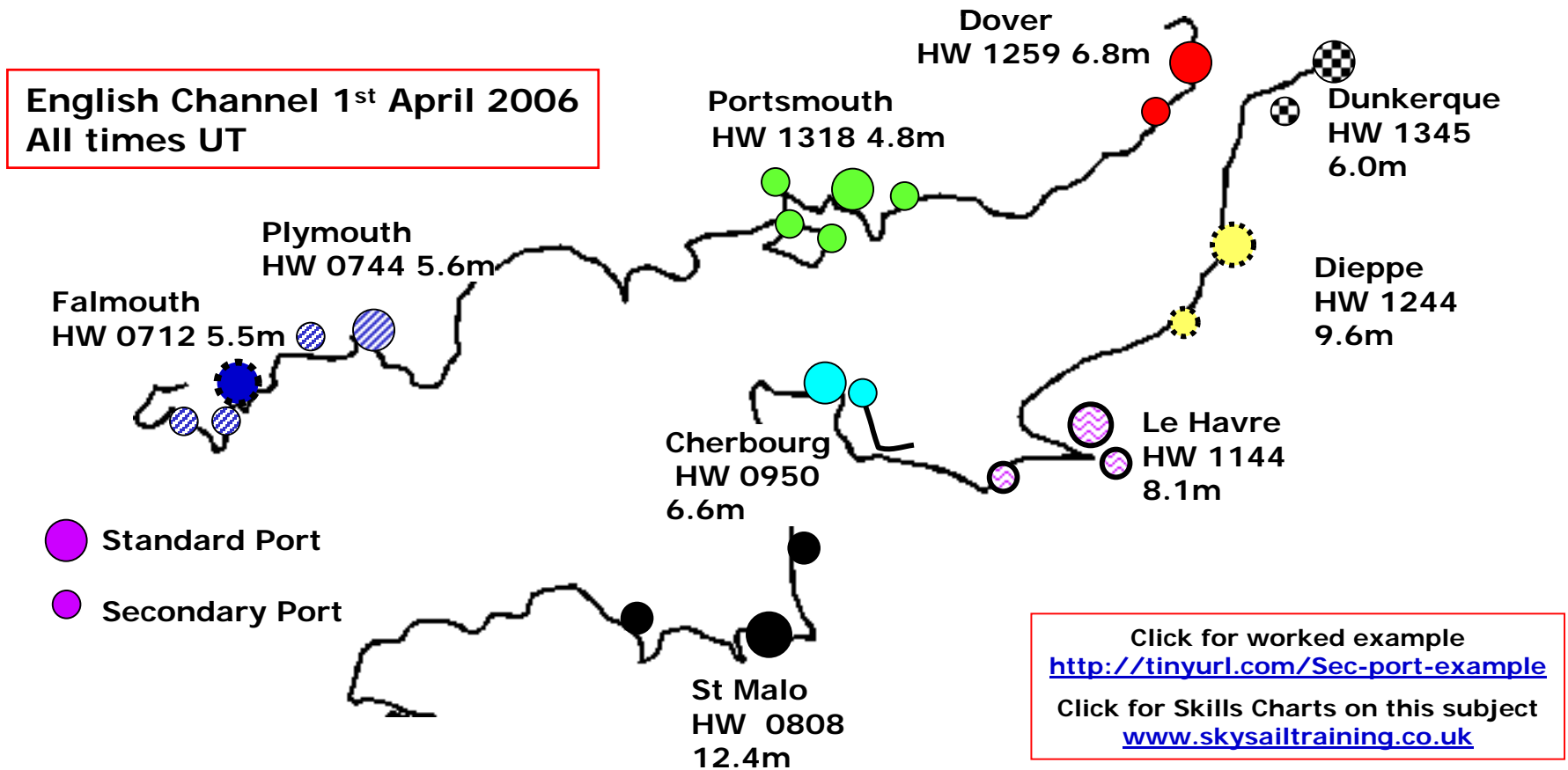


SECONDARY PORTS - Heights and Times Differences of tides

Home page www.skysailtraining.co.uk

If we look at the progress of High Water up the Channel from west to east, in general the time of HW is later in the day, and the height of HW and the range of tide varies with the local geography. Dover HW is about 6 hours after Falmouth; the range in the Baie of St Malo can be 13 metres, in Poole harbour it is 2 metres. If we knew the detailed height and time differences, which are consistent and predictable, between Dover and all the other ports, we could determine all the other port tide times and heights from Dover only. It is obviously easier to publish in the almanac the tide tables for the various Standard Ports, which are usually major centres of commercial shipping, and look up the tides directly.

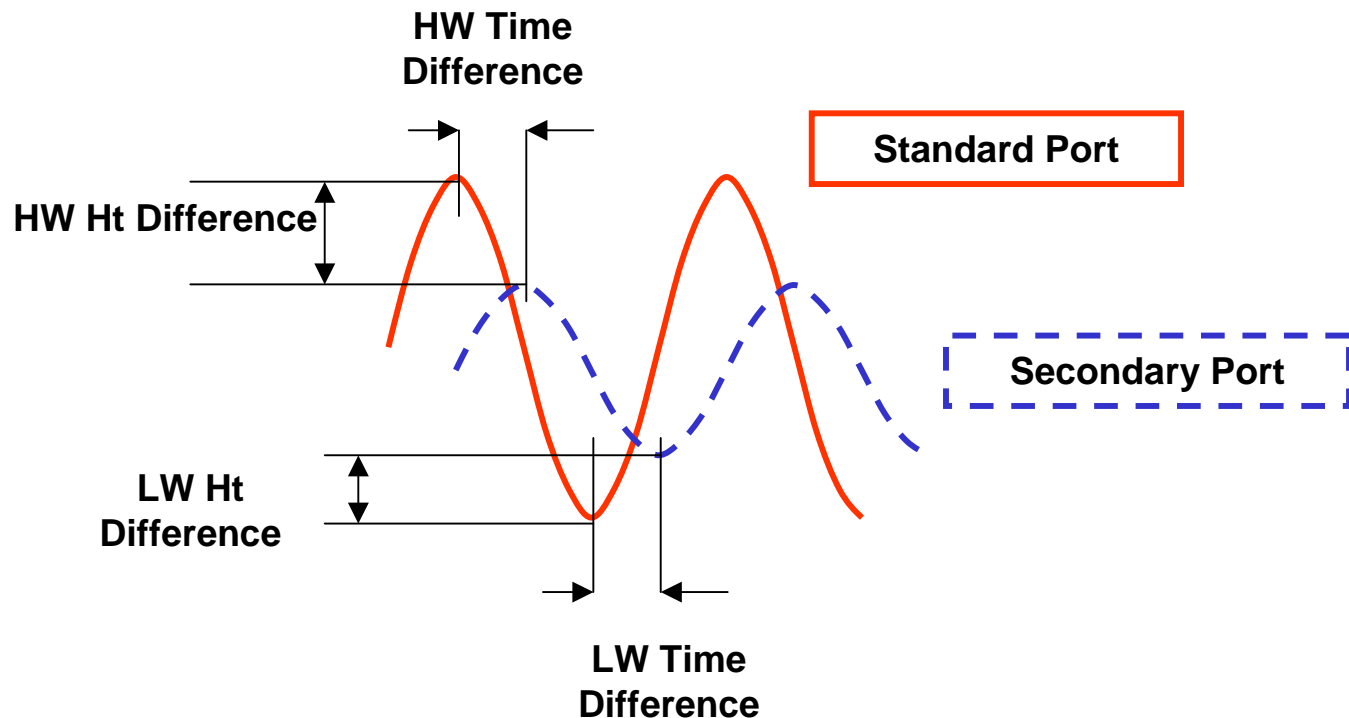


Secondary Port Tides – Times and Heights of Tides

There are many other ports used by leisure and small commercial boats, where we still need to know the tides. It would be prohibitive in cost and sheer volume to publish the tide tables for all these ports, which are known as Secondary Ports. Secondary Ports are related to the most suitable Standard Port (not necessarily the nearest, but that with the most similar shape of curve).

So in the almanac we find the details of these ports which show the 'DIFFERENCES' between the Standard Port and the Secondary Port, and we can use these to find out the times and heights of the Secondary Port.

We then apply these new times and heights to the Tide Curve for the Standard Port, and it becomes a Tide Curve for the Secondary Port.



ALMANAC ENTRY

HW Braye is approximately 4 hours before HW Dover; Mean tide height is 3.5 metres (average of MHWS, MHWN, MLWS, MLWN);

Duration of rising tide from LW to HW is 5 hrs 45 minutes; Time Zone 0 (UT).

The arrow next to St Helier just means turn the pages to the right to find the Standard Port.

9.19.7 BRAYE (Alderney)

Alderney 49°43'·77N 02°11'·51W

CHARTS AC 2669, 3653, 60, 2845, 5604; SHOM 7158, 6934; ECM 1014; Imray C33A; Stanfords 2, 7, 16, 26.

TIDES -0400 Dover; ML 3·5; Duration 0545; Zone 0 (UT)

Standard Port ST HELIER (→)

Times		Height (metres)					
High Water	Low Water	MHWS	MHWN	MLWN	MLWS		
0300	0900	0200	0900	11·0	8·1	4·0	1·4
1500	2100	1400	2100				
Differences BRAYE							
+0050	+0040	+0025	+0105	-4·8	-3·4	-1·5	-0·5

The 'Times' are the times of High and Low Water direct from the tide table for St Helier. Do not add the hour for Summer Time. The time differences apply only at local standard time (UT in this case).

The differences BRAYE are in 24 hour notation, thus +0105 is 65 minutes later.

So looking at this secondary port at Braye:

when HW St Helier is at 0300, the HW at BRAYE is 50 minutes later.

when HW St Helier is at 0900, the HW at BRAYE is 40 minutes later.

Between 0300 and 0900, interpolate the difference at Braye, so at 0600 the difference is +0045 minutes, and HW Braye is at 0645. If required you can now add the hour for Summer Time = -0745.

Similarly, from 0900 to 1500, the difference varies from +40 to +50 minutes,

from 1500 to 2100 it is +50 to +40, and from 2100 to 0300 it is +40 to +50.

FINDING THE SECONDARY PORT DIFFERENCES FOR TIME

One way of finding the differences is as follows:

The difference at Braye varies by 10 minutes over 6 hours, so each hour applies 1.66 minutes of difference between 0040 and 0050 minutes:

HW Time	Difference +
0300	50.0 mins
0400	48.3
0530 →	46.6
0600	44.9
0700	43.2
0800	41.6
0900	40.0 mins

So if the time of HW at St Helier is 0530 (UT), the difference at Braye is + 46 mins ie 0616.

Then add 1 hour if necessary for Daylight Saving Time

My students find this tabular method the most reliable and easy way, and you can readily work to the nearest half hour.

Use a similar method for the HW and LW heights between Springs and Neaps

You can also work it out by arithmetical ratios, or the RYA method is to draw similar triangles as shown on page 6.

SECONDARY PORT ALMANAC ENTRY

Differences for Height

The heights of tide in metres at St Helier are given for Mean High Water Springs, Mean High Water Neaps, MLWN, and MLWS. At MHWS, the height of tide is 11.0 metres, and the difference at Braye is -4.8 metres, so HW at Braye is 6.2m.

At MHWN the difference at Braye is -3.4m; if the Height of tide at St Helier is in between Springs and Neaps, then the difference at Braye is between -4.8 and -3.4.

9.19.7 BRAYE (Alderney)

Alderney 49°43'·77N 02°11'·51W

CHARTS AC 2669, 3653, 60, 2845, 5604; SHOM 7158, 6934; ECM 1014; Imray C33A; Stanfords 2, 7, 16, 26.

TIDES -0400 Dover; ML 3·5; Duration 0545; Zone 0 (UT)

Standard Port ST HELIER (→)

Times				Height (metres)			
High Water	Low Water			MHWS	MHWN	MLWN	MLWS
0300	0900	0200	0900	11·0	8·1	4·0	1·4
1500	2100	1400	2100				
Differences BRAYE							
+0050	+0040	+0025	+0105	-4·8	-3·4	-1·5	-0·5

HW Height m	Difference m
11.0	-4.8
10.5	-4.6
<u>9.9</u> → 10.0	-4.3
9.5	-4.1
9.0	-3.9
8.5	-3.7
8.1	-3.4

So if HW at St Helier is 9.9m, the difference at Braye is -4.3m, and HW is 9.9 - 4.3 = 5.6m.

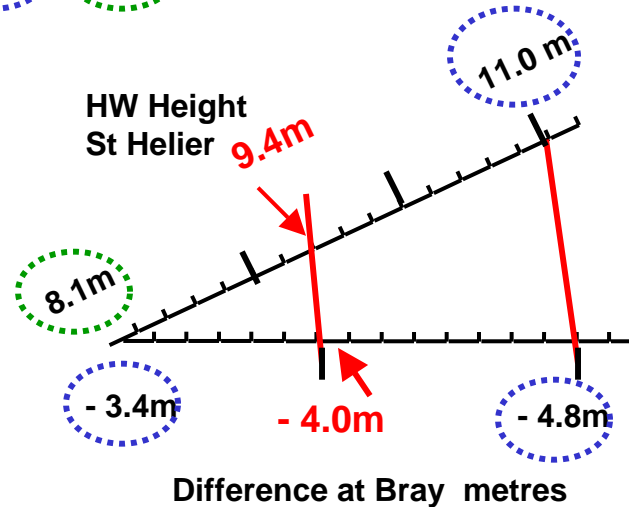
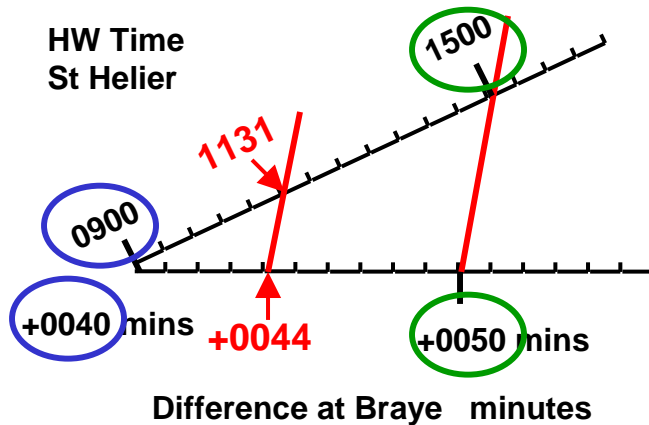
GRAPHICAL METHOD

SECONDARY PORT EXAMPLE - BRAYE Saturday June 8th

For St Helier, HW 1131, Tide Height at HW 9.4m, find the differences at Braye

Standard Port St HELIER (→) to the right in the almanac pages

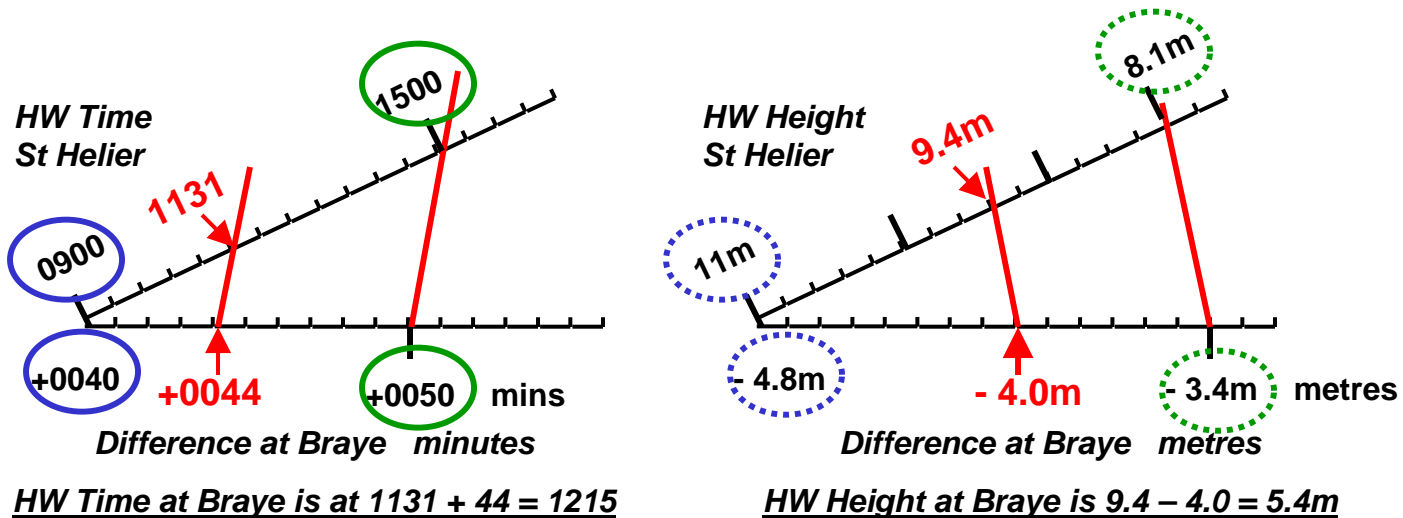
Times (UT)				Height (metres)			
High Water		Low Water		MHWS	MHWN	MLWN	MLWS
0300	0900	0200	0900	11.0	8.1	4.0	1.4
1500	2100	1400	2100				
Differences BRAYE							
+0050	+0040	+0025	0105	-4.8	-3.4	-1.5	-0.5



HW Time Braye is at 1131 + 44 = 1215

HW Height at Braye is 9.4 - 4.0 = 5.4m

Secondary Port Tides – Finding Differences



1131 hrs lies between 0900 and 1500 so we interpolate between +0040 and +0050 minutes to find the difference at Braye, = +44 minutes

9.4 metres lies between 8.1m and 11.0m so we interpolate between -3.4 and -4.8 to find the difference at Braye, = -4.0 metres

- See diagrams above. It's a similar process for LW Time and LW Height.
- Once we have found the required times and heights we can use the the Tidal Curve for the Standard Port, but *entering the times and heights for the Secondary Port*.
- Then we can find height at any time for the Secondary Port, or the time for any height.

A graphical method for differences

