

# Height of Tides with Poole Sailing

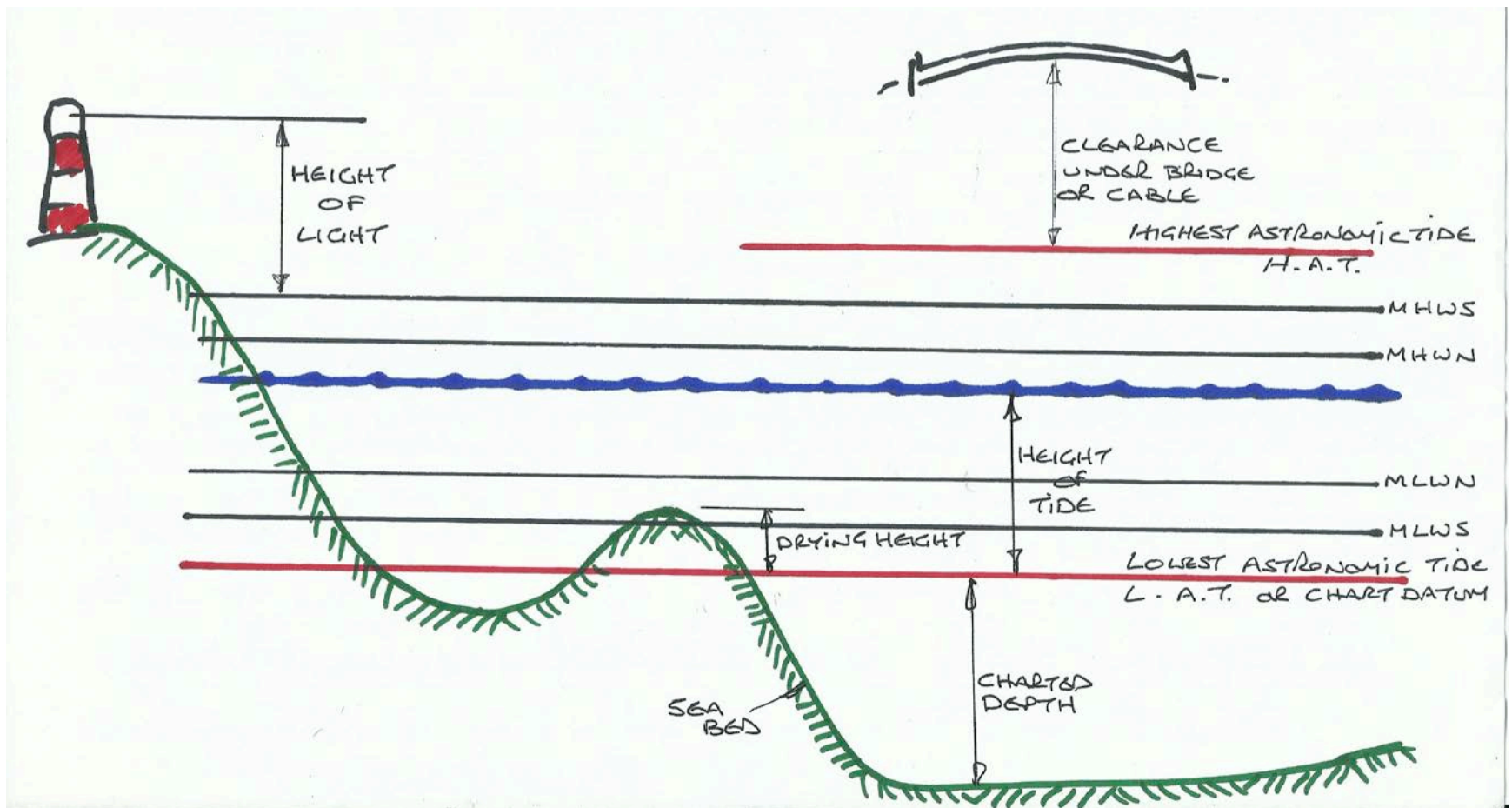
In tidal waters the actual depth of water varies throughout the day. We often need to work out just when we can safely sail over an area of shallows or cross a sill into a marina. Some navigation apps and programs will give tidal height predictions at various ports for a day or so ahead of time, but we will concentrate on the method available in our Almanac which can be used months ahead of our planned trip. But be warned, the available data is based solely on astronomic predictions, so you must apply a generous safety margin to allow for atmospheric conditions and 'sea state', whether that is caused by weather conditions or a passing vessel.



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The section below shows that the Drying Heights and Charted Depths shown on charts relate to the level known as Chart Datum or L.A.T. while clearances under Bridges and cables relate to the Highest Astronomic Tide or H.A.T.

In tidal waters the navigable depth (or clearance) will increase and decrease with the ebb and flow of the tide, so the available 'depth of water' will be either, an addition of the Height of Tide plus the Charted Depth, or the Height of Tide minus a Drying Height.



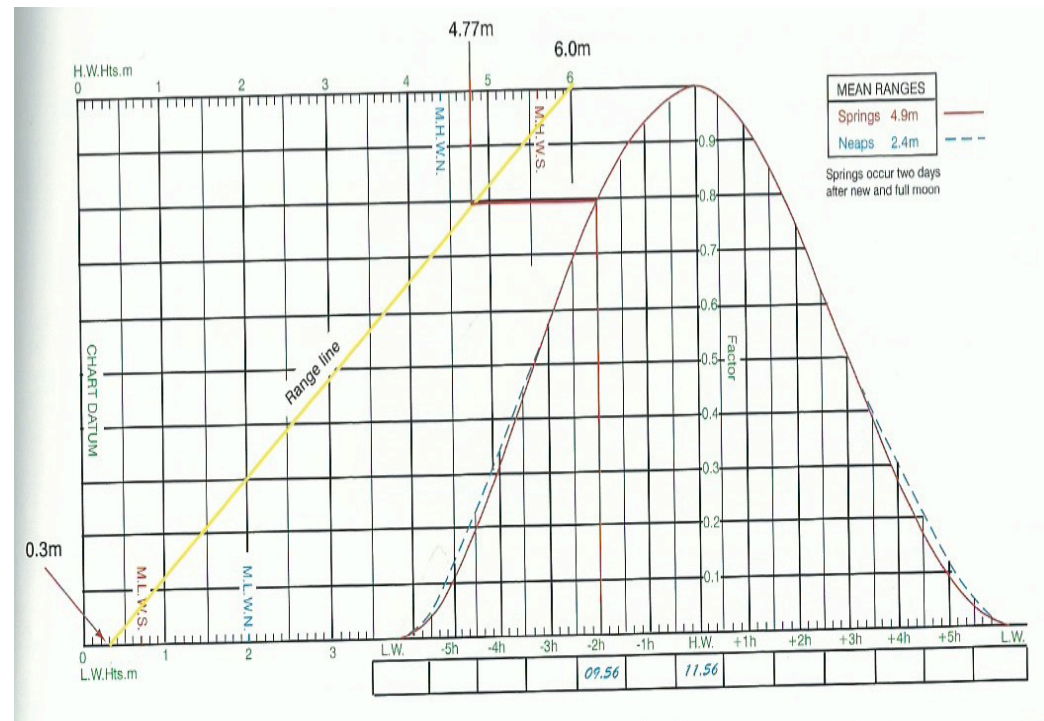
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26	0207 1.4 0822 5.2 TU 1438 0.9 2055 5.3	11	0338 1.2 0943 5.3 TH 1555 1.0 2207 5.2	26	0314 0.6 0927 5.5 F 1542 0.2 2155 5.7
27	0256 1.0 0906 5.6 W 1523 0.4 2138 5.6	12	0407 1.0 1013 5.4 F 1623 0.9 2234 5.3	27	0357 0.4 1011 6.0 SA 1628 0.3 2236 5.8
28	0339 0.6 0951 5.9 TH 1606 0.1 2219 5.8	13	0435 0.9 1043 5.4 SA 1650 0.8 2301 5.3	28	0440 0.3 1055 6.0 SU 1707 0.2 2319 5.8
29	0420 0.3 1034 6.1 F 1649 0.0 2300 5.9	14	0504 0.9 1114 5.4 SU 1719 0.9 2330 5.3	29	0501 0.8 1141 5.8 M 1751 0.5 0605 0.2
30	0500 0.2 1145 5.2	15	0535 0.6 1145 5.2	30	0605 0.2 1145 5.2

All of the Standard Ports have pages of tide data giving the times and heights of High water and Low Water for each day of the year. Times are given in the regions standard time zone so be prepared to add an hour for summer time where appropriate.

In this example, Sunday the 28<sup>th</sup>, HW is at 10.56 standard time which is 11.56 summer time. The height of HW is 6.0 metres and LW is at 0.3 metres.

The almanac will also have a curve for each standard port which shows the way that the tide ebbs and flows in that area. You can load the curve with the three bits of information taken from the tide data page. The time of HW can be put in the 'time' scale at the foot of the curve. The heights of HW and LW can then be plotted on the appropriate scales. A line drawn between the high water and the low water heights will represent the range of tide on that particular day. The height of tide at any time of day can then be determined by following a route from the time scale through the curve and the range line to the height scale.



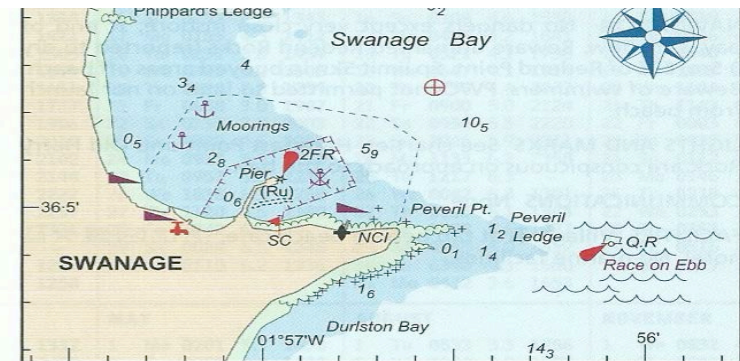


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We can't have full tidal data for every port and anchorage. So for those minor ports we are given a series of adjustments to make to a Standard Ports data to turn the data into relevant figures for the 'Secondary Port'. We want to go anchor in Swanage Bay on the afternoon of 1<sup>st</sup> January. Looking at the data page for Swanage we can see that it is a secondary port based on the standard port of Poole. Reference to the Poole Harbour tide data below shows that on 1<sup>st</sup> January low water is at 18.10 UT, and that the Height of Tide at low water will be 0.6m. Height of tide at the earlier high water is 2.1m. We don't have to make any adjustments to the times as we are in winter and we can tell from the range that we are on the 'spring' tide cycle.

The tidal data adjustments for Swanage, shown below the chartlet, say that when low water at Poole occurs at 05.00 or 17.00 then we should take off 45 minutes to turn it into a Swanage time. But also that if the Poole LW time is at 11.00 or 23.00 then we should take off 50 minutes. Poole LW is at 18.10 so we will take off 46 mins to make the Swanage LW time 17.24. Similarly the table says that when the Poole HW Height is 2.2m we should take off 0.1m to turn it into a Swanage height, or if the Poole HW height is 1.7m we should add 0.1m. On the day the Poole HW height is 2.1m so we will reduce that by 0.1 to 2m at Swanage HW. The table further shows that we should add 0.2m to the Poole LW height to turn it into a Swanage LW height of 0.8m on the day.

STANDARD TIME (UT)				
For Summer Time add ONE hour in non-shaded areas				
POOLE HARBOUR LAT 50°				
HEIGHTS OF HIGH WATER AND TIMES AND HE				
JANUARY		FEBRUARY		
Time m	Time m	Time m	Time m	Time
1 0551 0.8	16 0636 0.7	1 0654 0.7	16 0727 0.8	1 0551
1036 2.1	1124 2.2	1153 2.1	1104 1.9	1051
SU 1810 0.6	M 1857 0.5	W 1913 0.5	TH 1943 0.8	W 1811
2320 1.9	2356 2.0	2359 1.9	2312 1.7	2321
2 0630 0.8	17 0720 0.8	2 0737 0.8	17 0803 0.9	2 0630
1114 2.1	1150 2.0	1234 2.0	1115 1.8	1131
M 1849 0.6	TU 1940 0.6	TH 1957 0.6	F 2021 1.0	TH 1851
2359 1.8		2314 1.8	2333 1.7	
3 0712 0.9	18 0033 1.8	3 0824 0.9	18 0844 1.1	3 0003
1031 2.0	0804 1.0	1143 1.8	1148 1.7	0711
TU 1932 0.7	W 1123 1.9	F 2047 0.8	SA 2105 1.1	F 1221
2237 1.8	2023 0.8			1931
4 0758 1.0	19 0000 1.7	4 0005 1.7	19 0010 1.6	4 0045
1101 1.9	0849 1.1	0922 1.0	0933 1.2	0801



**TIDES** HW Sp -0235 & +0125, Np -0515 & +0120 on Dover; ML 1.5

Standard Port POOLE HARBOUR (→)

Times		Height (metres)			
High Water	Low Water	MHWS	MHWN	MLWN	MLWS
—	0500 1100	2.2	1.7	1.2	0.6
—	1700 2300				

**Differences SWANAGE**

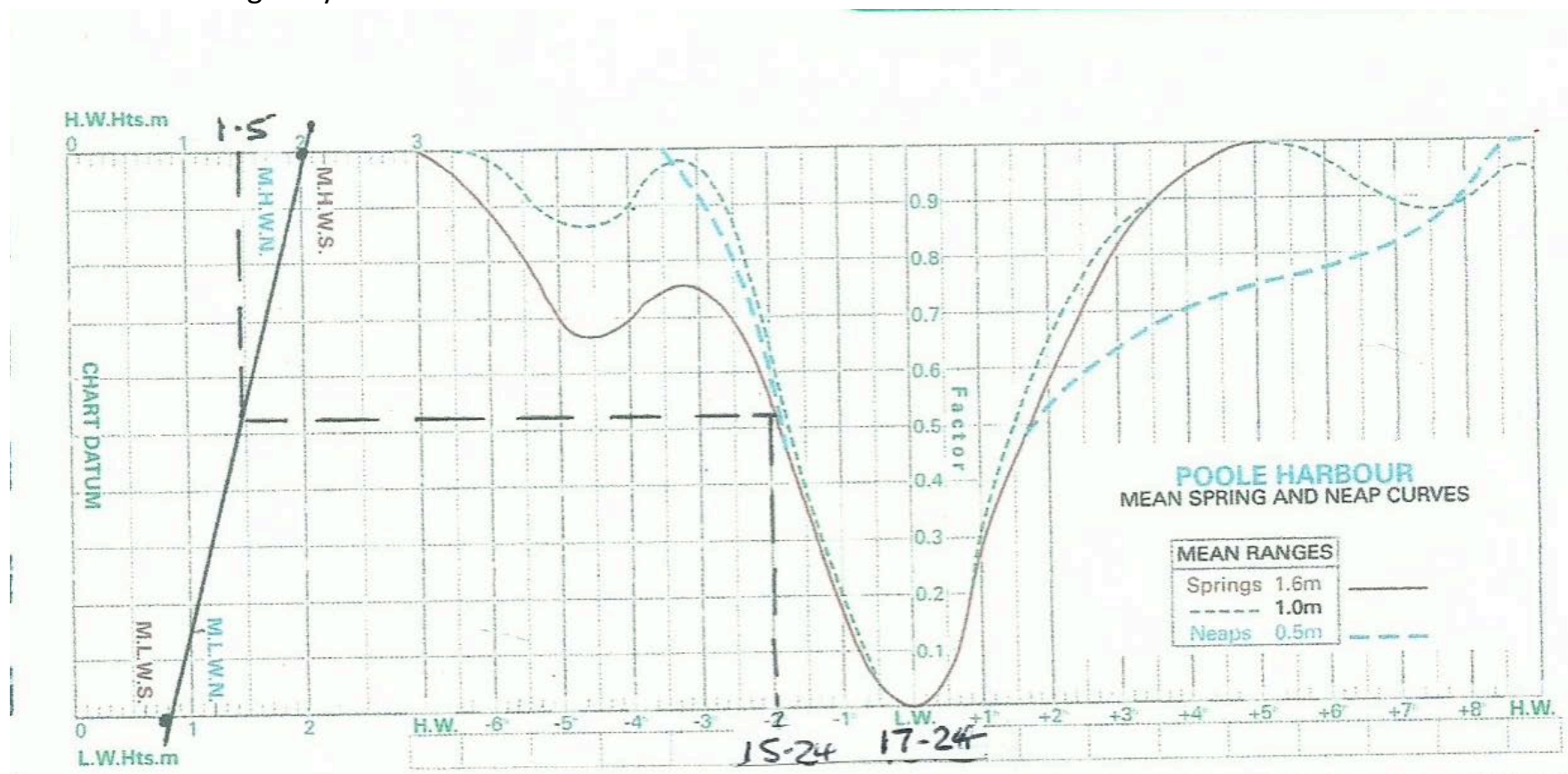
—	—	-0045	-0050	-0.1	+0.1	+0.2	+0.2
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**NOTE:** From Swanage to Christchurch double HWs occur except at neaps. HW differences refer to the higher HW and are approximate.

# Height of Tides

## with Poole Sailing

We can now put the Time of Low water Swanage, plus the Heights of High and Low water onto the Standard Port's 'Curve'. We can then draw a line between the Low water and the high water heights, to represent the 'Range' of tide on that afternoon. We can then link Height of Tide to Time of Day, and establish that the Height of Tide in Swanage Bay will be 1.5 metres at 15.24.



# Height of Tides

## with Poole sailing

To put the result into a worthwhile context let's say that we have arrived in Swanage Bay at 15.24 on the 1<sup>st</sup> of January with a boat that draws 2.0m.

We have come to anchor with our depth gauge indicating that we have 1.5m below our keel.

We have deduced that at 15.24 we have a Height of Tide of 1.5m and from the tables we deduced that at Low Water the Height of tide would be 0.8m and at High Water it was 2.0.

From the diagram we can see that the boat will fall 0.7 metres between 15.24 and LW leaving a minimum of 0.8metres of clearance 'under our keel'. And further that the boat will rise by a further 0.5m to HW so we should allow for a maximum depth of 4m when deciding on the 'scope' of our anchor warp.

