Australian Government
Department of Defence

AUSTRALIAN HYDROGRAPHIC OFFICE

Fact Sheet: Navigation

Tides - Calculating HW and LW at secondary ports (semi-diurnal and diurnal tides)

Step	Instruction – semi-diurnal tides
1	Obtain predicted times and heights of high and low waters at the standard port from Chapter 3, enter them in Box 1 (times) and 2 (heights).
2	Obtain MSL and spring levels for the standard port from Chapter 4, enter them in Box 3 (MSL) and Box 4 (MHWS and MLWS).
3	Subtract the MLWS value from that of MHWS for the standard port, enter the result in Box 5 (levels range).
4	Subtract the MSL value for the standard port in Box 3 from the height predictions in Box 2, enter results in Box 6. The HW column should have positive values, the LW column should have negative values.
5	Obtain data for the Secondary Port from Chapter 4 and enter the mean time difference in Box 7, MSL in Box 8, MHWS and MLWS in Box 9.
6	Subtract the MLWS value from that of MHWS for the secondary port, enter the result in Box 10 (levels range).
7	Obtain the range ratio by dividing the secondary port levels range in Box 10 by that of the standard port range in Box 5, enter the result in Box 11.
8	Multiply the figures in Box 6 by the range ratio in Box 11, enter the corresponding products in Box 12.
9	Obtain the correction to chart datum from Chapter 5 and enter in Box 13.
10	Add the mean time difference for the Secondary Port in Box 7 to all predicted times for the Standard Port in Box 1, enter the results in Box 14. THESE ARE THE TIMES OF HIGH AND LOW WATER FOR THE SECONDARY PORT.
11	Add the values in Box 12 and Box 13 to the MSL value for the Secondary Port in Box 8, enter the results in Box 15. THESE ARE THE HEIGHTS OF HIGH AND LOW WATER FOR THE SECONDARY PORT

	(1) Time		(2) Height		(3) MSL	(4) Levels		(5) Levels Range
Standard Port Data	HW	LW	HW	LW		MHWS	MLWS	MHWS - MLWS
(6) Predicted Height - MSL (2) - (3)								
Secondary Port Data	(7) Mean Time Difference				(8) MSL	(9) MHWS	MLWS	(10) Levels Range MHWS - MLWS
(12) Calculation (6)*(11)								(11) Range Ratio (10) / (5)
(13) To Chart Datum								
Secondary Port Results	(14) **Time** (1) + (7)		(15) **Height** (8)+(12)+(13)					

Step	Instruction – diurnal tides
1	Obtain predicted times and heights of high and low waters at the standard port from Chapter 3, enter them in Box 1 (times) and 2 (heights).
2	Obtain MSL and spring levels for the standard port from Chapter 4, enter them in Box 3 (MSL) and Box 4 (MHHW and MLLW).
3	Subtract the MLLW value from that of MHHW for the standard port, enter the result in Box 5 (levels range).
4	Subtract the MSL value for the standard port in Box 3 from the height predictions in Box 2, enter results in Box 6. The HW column should have positive values, the LW column should have negative values.
5	Obtain data for the secondary port from Chapter 4 and enter the mean time difference in Box 7, MSL in Box 8, MHHW and MLLW in Box 9.
6	Subtract the MLLW value from that of MHHW for the secondary port, enter the result in Box 10 (levels range).
7	Obtain the range ratio by dividing the secondary port levels range in Box 10 by that of the standard port in Box 5, enter the result in Box 11.
8	Multiply the figures in Box 6 by the range ratio in Box 11, enter the corresponding products in Box 12.
9	Obtain the correction to chart datum from Chapter 5 and enter in Box 13.
10	Add the mean time difference for the secondary port in Box 7 to all predicted times for the Standard Port in Box 1, enter the results in Box 14. THESE ARE THE TIMES OF HIGH AND LOW WATER FOR THE SECONDARY PORT.
11	Add the values in Box 12 and Box 13 to the MSL value for the secondary port in Box 8, enter the results in Box 15. THESE ARE THE HEIGHTS OF HIGH AND LOW WATER FOR THE SECONDARY PORT.

	(1) Time		(2) Height		(3) MSL	(4) Levels		(5) Levels Range
Standard Port Data	HW	LW	HW	LW		MHHW	MLLW	MHHW - MLLW
(6) Predicted Height - MSL (2) - (3)								
Secondary Port Data	(7) Mean Time Difference				(8) MSL	(9) MHHW	MLLW	(10) Levels Range MHHW - MLLW
(12) Calculation (6)*(11)								(11) Range Ratio (10) / (5)
(13) To Chart Datum								
Secondary Port Results	(14) **Time** (1) + (7)		(15) **Height** (8)+(12)+(13)					