USING TIDAL CURVES

How to work out the depth of water required to anchor safely

Tidal Curves

OK, you understand tidal terms and what they mean and how to work out tides for STANDARD PORTS and for SECONDARY PORTS

Now lets put it all together in a practical situation and look at how you can calculate the depth of water you'll need to anchor safely in any harbour or bay
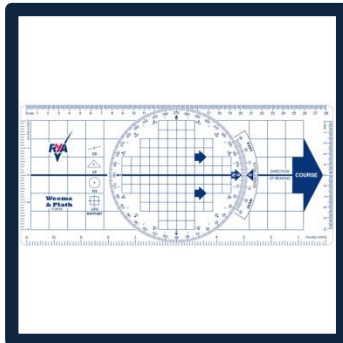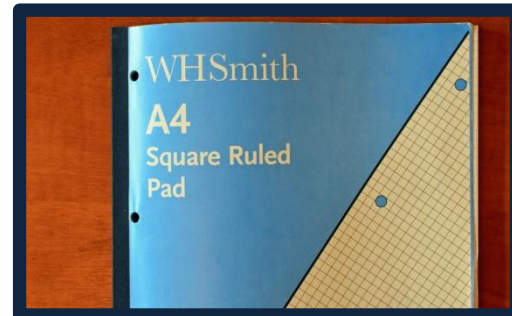
You Will Need

RYA Almanac

Pad of paper, pencil and rubber

RYA Chartplotter

Pad of Graph Paper

Question

At 1635 UT on November 9th you are preparing to anchor in HINDER SOUND (see Endal Marina), the draught of your boat is 1.5m

- What is the HEIGHT OF TIDE at 16.35?

- How far will the TIDE FALL between 16.35 and the next low water?

- What DEPTH OF WATER should you drop your anchor at 16.35 UT to ensure a clearance of 2.0m below the keel at the next low water?

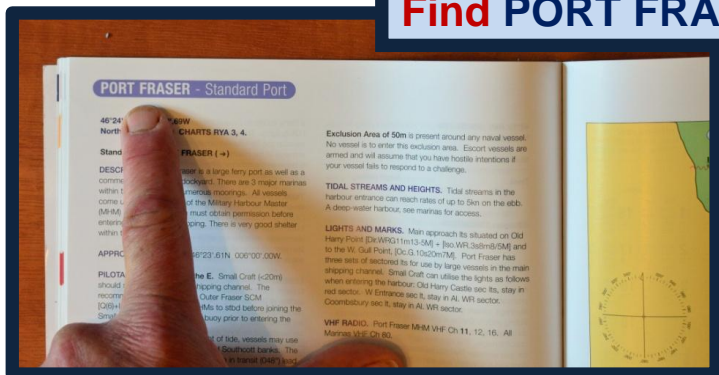# Time of Tide

Find HINDER SOUND in the RYA ALMANAC (page 64)
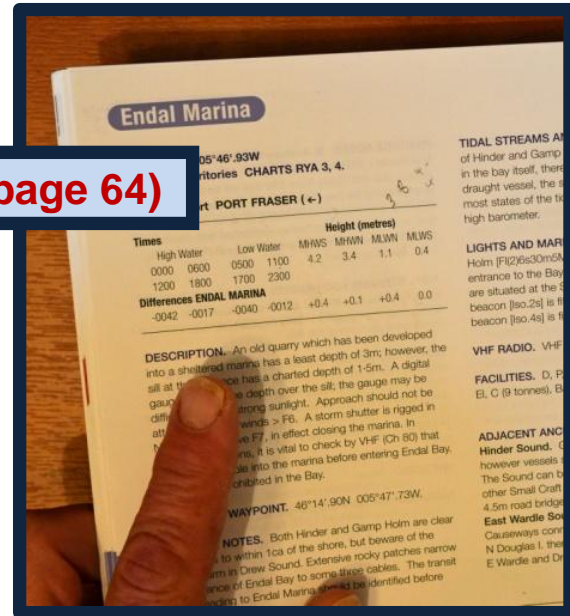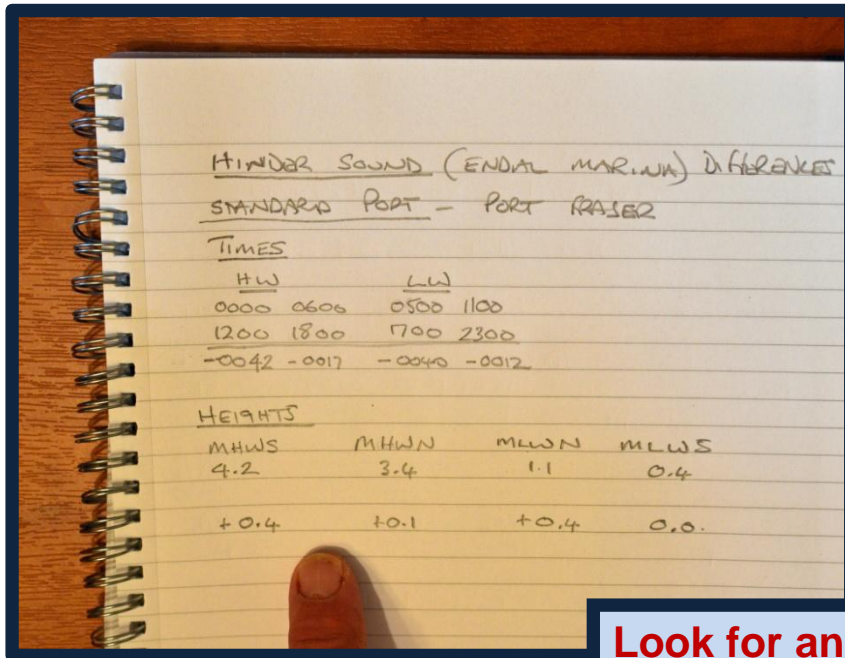
Look for and write down the following information:
- **The STANDARD PORT**
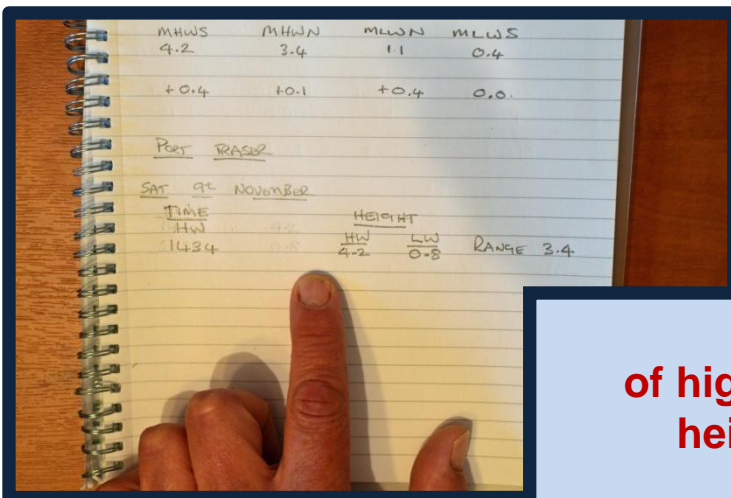- **The differences for ENDAL MARINA**

Time of Tide

Look up 9th November and circle it with pencil (page 50)

Write down the time of high water in the afternoon and the heights for HW and the next LW and work out the range

Time of Tide
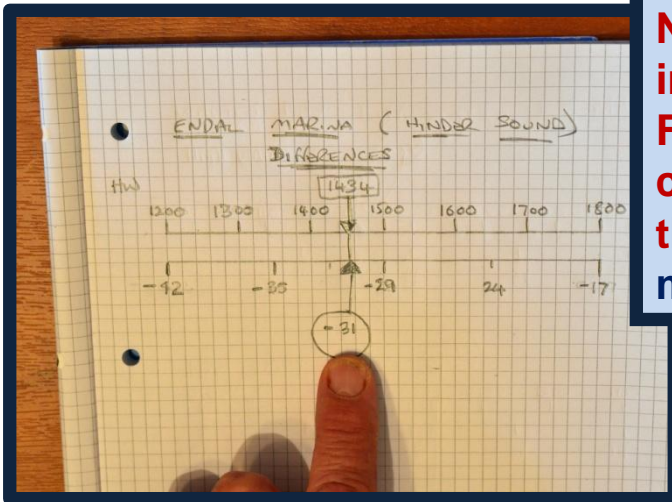
Next, you will need the graph paper to interpolate between the corrections. Firstly expand the HW data and then you can then read off the right correction for the HW time of 14.34 - in this case minus 31 minutes
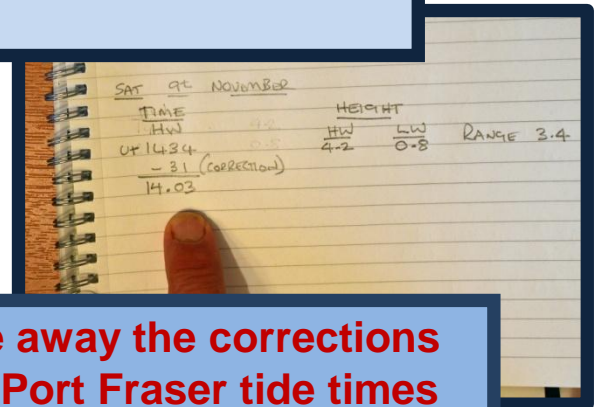
Now take away the corrections from the Port Fraser tide times
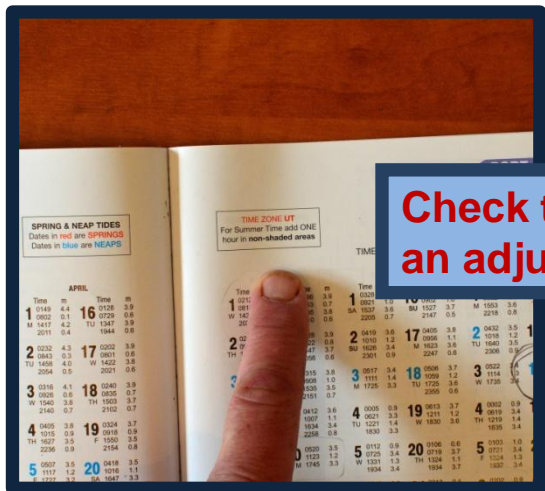
Check to see if you need to make an adjustment for SUMMER TIME

You can see you DO NOT need to adjust the times

Height of Tide

Now you can add the differences in heights for ENDAL MARINA (Hinder Sound). Firstly, find the tidal curve for PORT FRASER (page51)
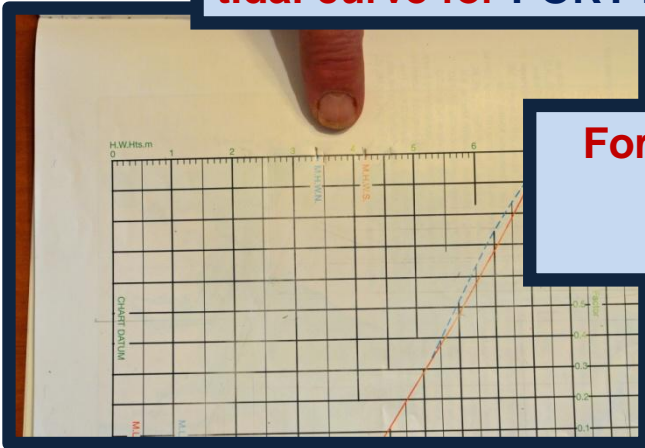
For HW you can see that the height of tide for that day is the maximum, therefore you need to add 0.4m to the HW height

For LW you can see that the height of tide is about halfway between the two figures, therefore you need to add 0.2m to the LW height

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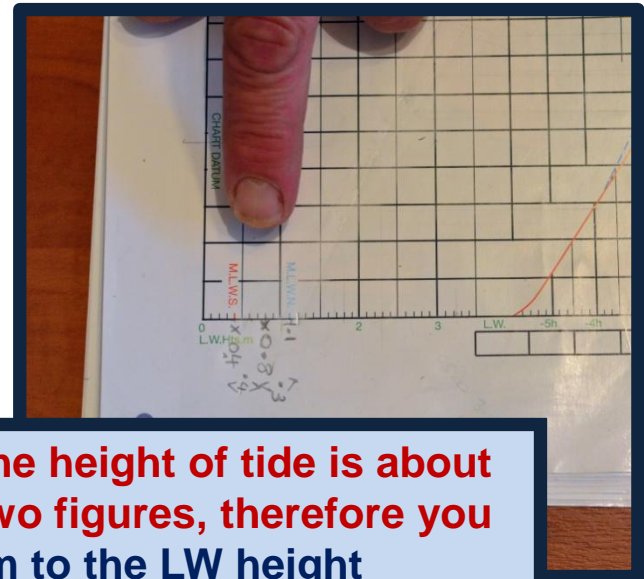
Using Tidal Curves

Now you know the heights of **HW** and **LW** at **ENDAL MARINA**, you are now able work out the **height of tide at 16.35**
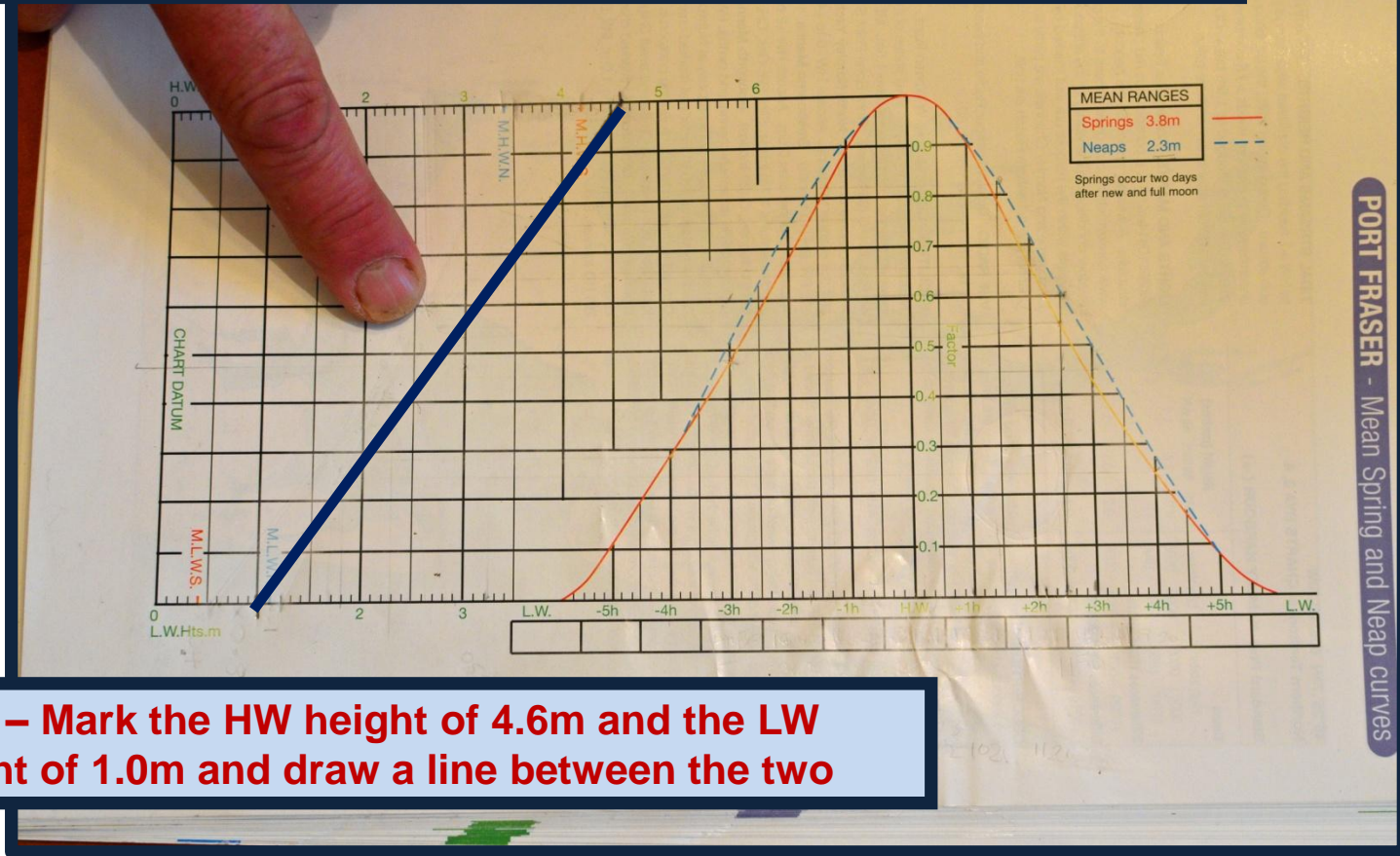
First – Mark the HW height of 4.6m and the LW height of 1.0m and draw a line between the two

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Using Tidal Curves

1403 1503 1603 1703
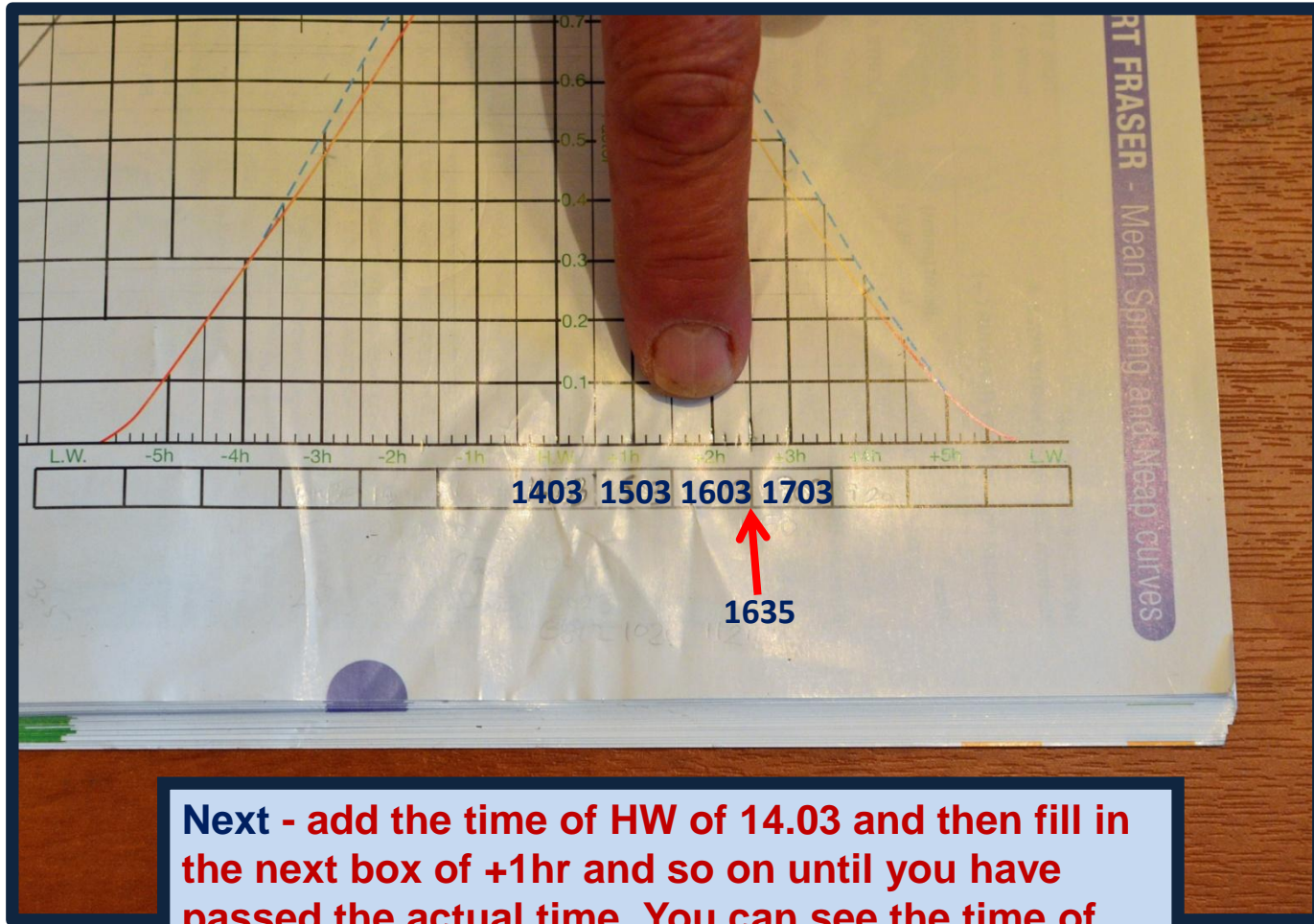
1635

Next - add the time of HW of 14.03 and then fill in the next box of +1hr and so on until you have passed the actual time. You can see the time of 16.35 is approx. 2½ hours after HW

Using Tidal Curves

SPRINGS OR NEAPS?
Look at the MEAN RANGES and write them down
and compare them to the range on the 9th November
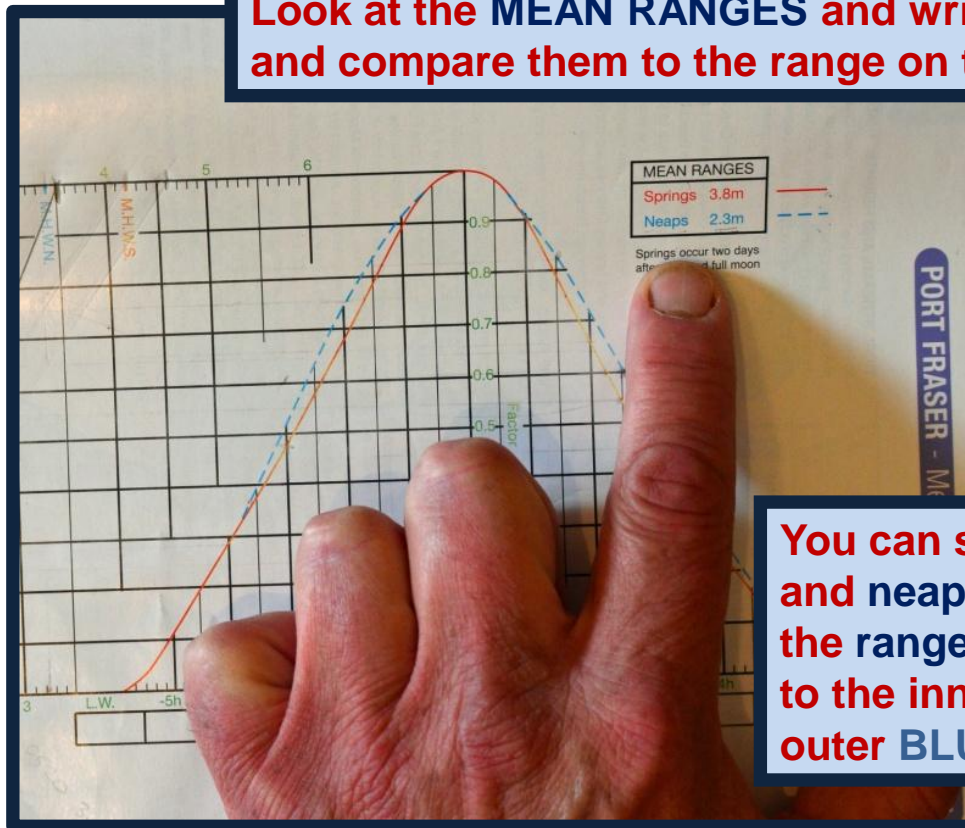
You can see the spring range is 3.8m
and neaps range is 2.3m. On 9th November
the range is 3.4m, which is closer
to the inner RED spring range line than the
outer BLUE neaps range line

Using Tidal Curves

Now draw a line from the time to the tidal curve, making sure it is closer to the **RED** spring line than the **BLUE** neaps line

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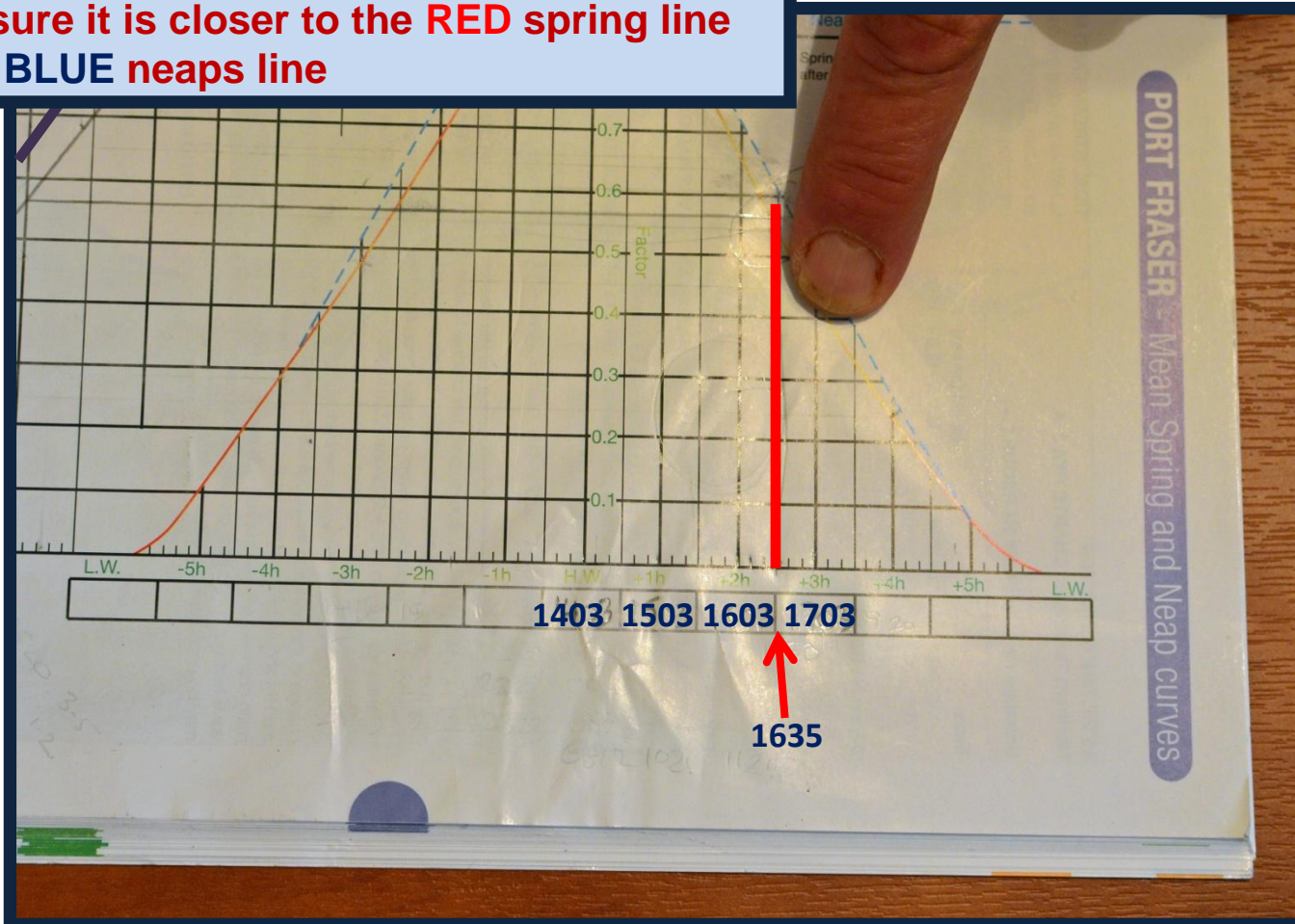
Using Tidal Curves

Then draw a line across to the tidal heights line and where the lines cross is the height of tide at 16.35

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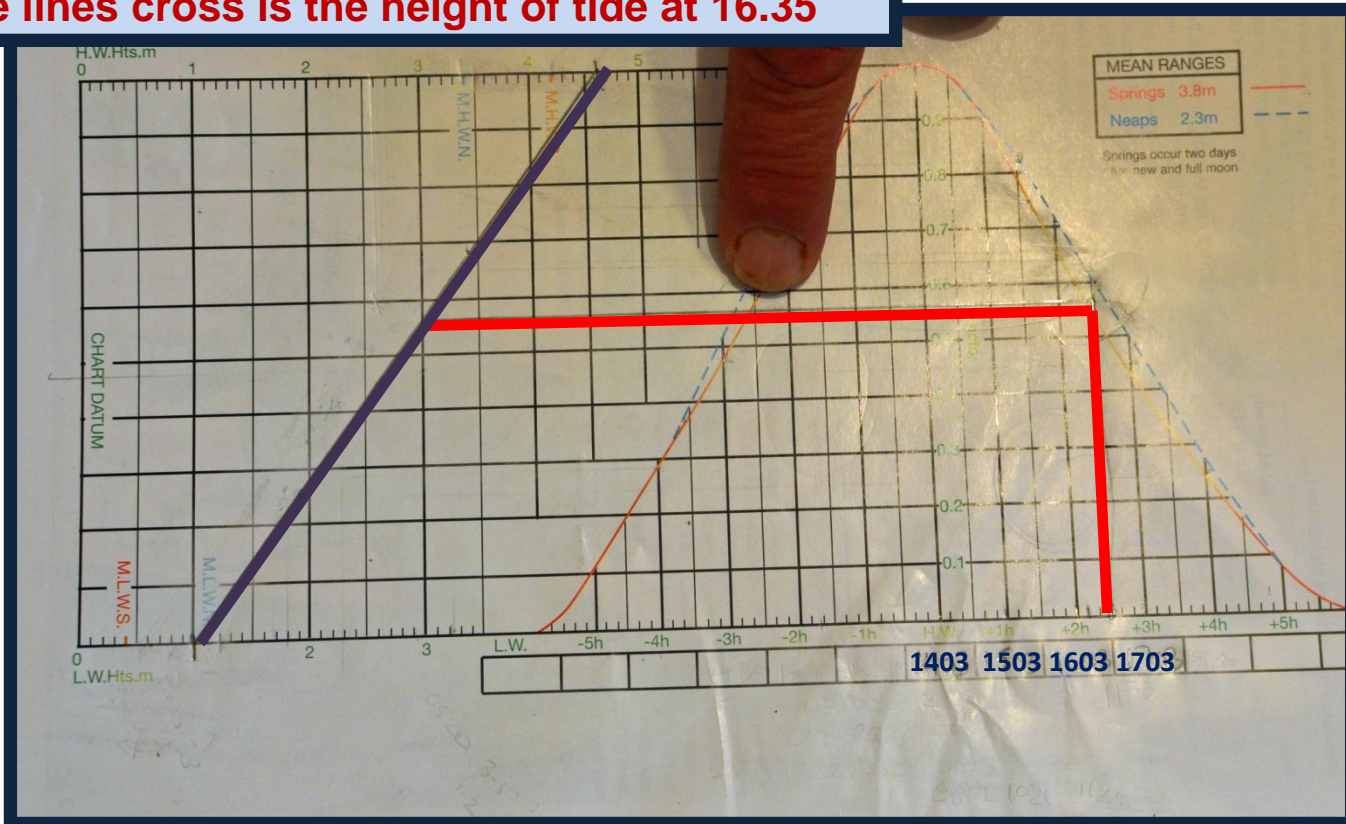
Using Tidal Curves

You can now see the **height of tide for 1635**
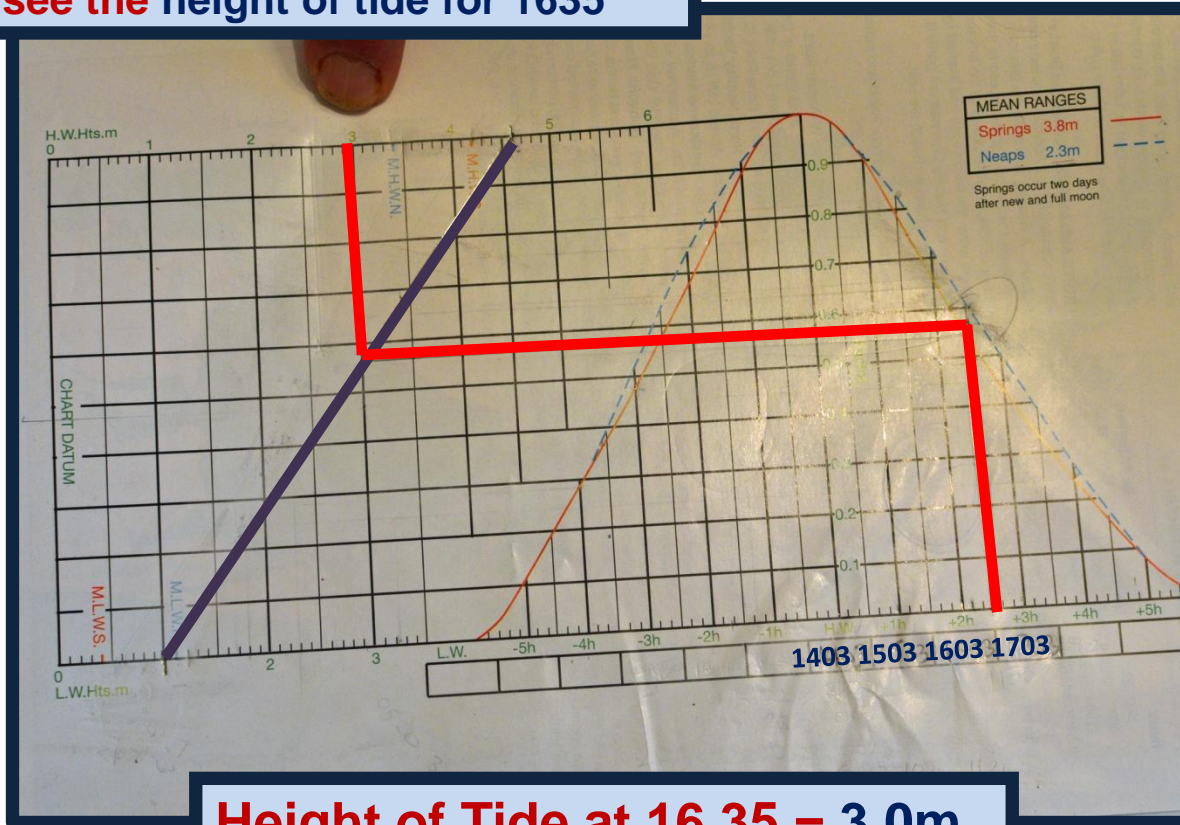
Height of Tide at 16.35 = 3.0m

Putting it all Together

You've just worked out that at **16.35** the height of tide is 3.0m
You know that at **LW** the height will be 1.0m
Therefore the tide will fall a further 2.0m
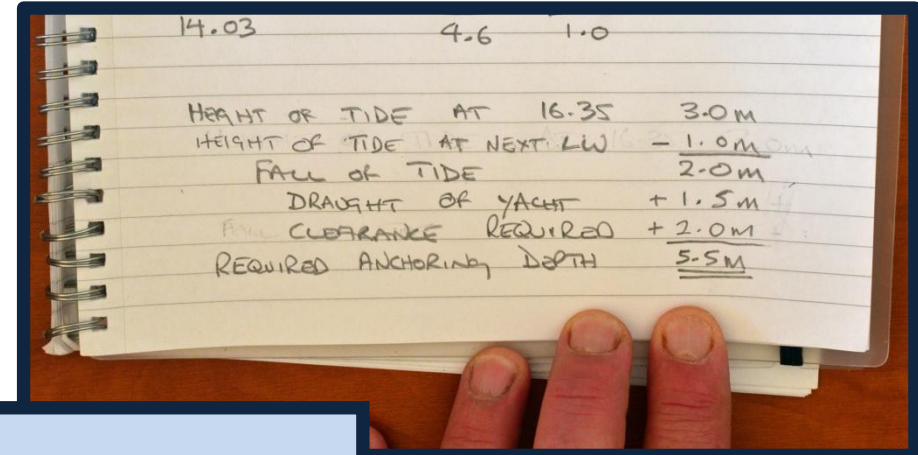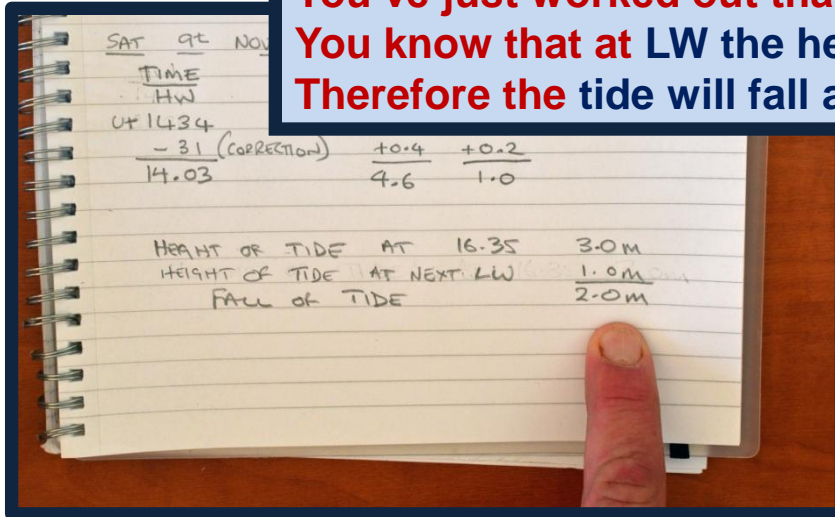
The final calculation is simple..........
Add the fall of tide (2.0m) **to the** draught of your yacht (1.5m) **and the** clearance you required (2.0m) = 5.5m

So the depth of water you need when dropping your anchor is 5.5m, this will ensure at LW you have 2.0m under your keel.

Answer

1. Hinder Sound (Endal Marina)   9th November

	Time	Heights	
	HW	**HW**	**LW**
Port Fraser (UT)	14.34	4.2m	0.8m
correction -	00.31	+ 0.4m	+ 0.2m
Hinder Sound (UT)	14.03	4.6m	1.0m

2.   Range (4.2m – 0.8m)   = 3.4m

3.   Height of tide at 16.35   = 3.0m
Fall of tide (3.0m–1.0m)   = 2.0m
Depth to anchor (Fall 2.0m + Draught 1.5m + Clearance 2.0m) =5.5m

Top Tips

Practical Tips for On-board Use

TOP TIP
In practical situations you may not have time to use the 'graph paper method' to interpolate tidal differences . With practice and experience you will be able to quickly compute in your head reasonably accurate figures.

If in doubt make sure you give yourself a bigger margin for error and anchor in deeper water.
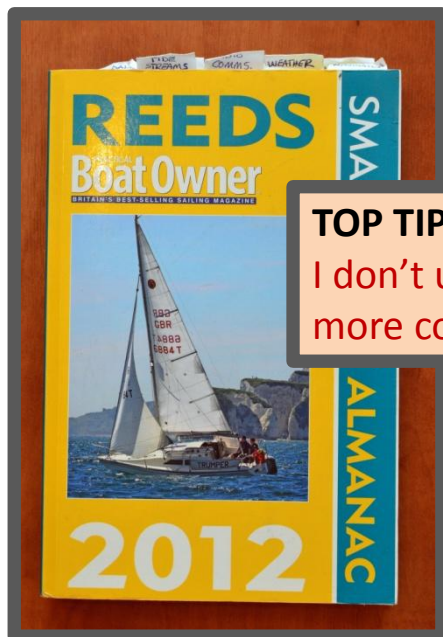
Top Tips

TOP TIP

In the real world I write down my tidal information in my **LOGBOOK** on the page that I intend to use during the passage. That way I always have the information to hand when I need to refer to it.
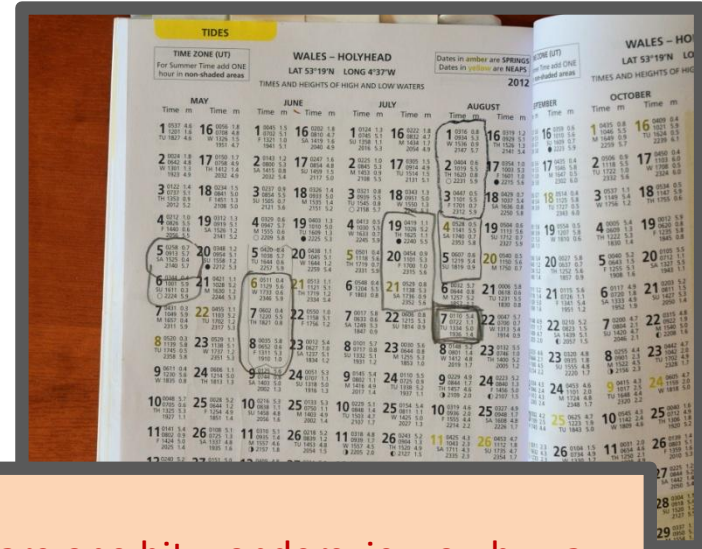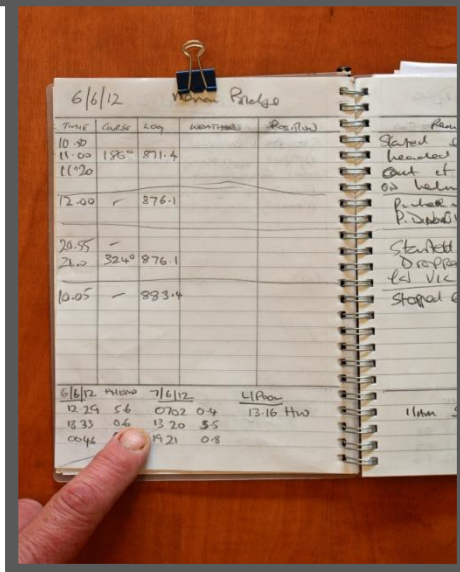
TOP TIP

As almanacs are one hit wonders, ie, you buy a new one each year, I always circle the range of dates I am using. This is so I don't get confused and copy the wrong data and it makes checking much easier and quicker.

Top Tips

TOP TIP
I don't use a full almanac and prefer the **PBO Cruising Almanac**.....it's more compact, better value for money and has all the information I need.

TOP TIP
Almanacs have load of pages of similar looking information. To make it easy to find tide times of ports I often use, I make tabs out of stickers. This way I can find the information I need quickly when I need to refer to it.

Further Reading

We highly recommend Tim Bartlett's
RYA Navigation Handbook (G6)

You can buy a copy of this book by visiting our on-line shop

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