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Shooting rapid waters

In the second highest tidal range in the world, the unexpected and the unusual present a different challenge each day...

Having been associated with the Portishead Lifeboat Trust for the last couple of years in a training and assessment capacity, I was keen to re-visit the Shoots particularly on a big tide. Having spent a large portion of my early life in Bristol sailing in and around the area, I was well aware of the massive tidal rates which prevail. Nothing however really prepares one for the simply awesome demonstration of nature's power that the Shoots can give on a big tide.

Look at an Admiralty chart or Pilot Guide of the area and tidal flows of 6 to 8 knots are quoted. No really accurate data seems to exist for the upper end of the Shoots, particularly under the new Severn Bridge. The fact that on our visit we saw nearly 14 knots on the log but zero speed over the ground gives one an idea of how almost biblical the area is. This tidal rate produces a series of levels in the water where the differences in height can be as much as 0.5m. These levels create almost a literal parting of the waters. The experience is truly amazing and also raises a number of very specific training issues.

The Lifeboat Trust uses the RYA powerboat scheme as the basis for its core training with all crews taking a Level 2 direct assessment, usually in Plymouth. This gives potential crews the chance to experience

different waters, particularly the more congested pilotage areas that abound in Plymouth.

The RYA scheme gives an excellent general grounding for crews, particularly when supplemented by specific training sessions geared towards the type of work and situations they need to be able to cope with.

Most shoots are carried out with 3 experienced crew - a coxswain, a navigator and a radio operator. The current lifeboat has

a GPS plotter, log and depth sounder but no radar. Navigation in this area requires very different approaches to normal situations. The tidal stream generally flows south westerly on the ebb and for a further 2 hours in the same direction on the early flood, swinging to north easterly on the main flood. Any cross channel journey in such flows is going to come under a considerable cross tidal effect.

Any use of GPS waypoints, i.e. "go to" be it either a defined latitude or longitude or a mark placed on the screen is going to be problematical to say the least. For example, with a tidal rate of say 5 knots and a speed of 20 knots through the water, the cross track error is likely to be of the order of 15°.

Running in rough water, with a speed down to 15 or even 10 knots, cross track error could be in the order of nearly 30° for a cross tidal flow, slightly less for flows on the quarter. Coxswains would find the continual corrections to course required by such cross track error nigh on impossible to cope with, aside from the fact that with the many dangers and areas of shallows in the area it would be foolhardy to constantly take the GPS corrected direct route without constant reference to a

"The RYA scheme gives an excellent general grounding for crews"

chart. At night, in rough water or at speed this would be even more difficult.

Coxswains generally prefer to steer compass courses corrected for the 4 factors required (tide, leeway, variation and deviation) to produce an accurate CTS (course to steer).

As a sideline, if you want to see what 30° looks like, open your hand, hold it at arms length and look at the horizon. The space between the tip of your little finger and outstretched thumb represents 20° to 25°. Set a course for your little finger and on an ebbing tide with some of these tidal flows you will end

up at your thumb! Think of the poor navigator having to calculate not only this vector but also to allow for leeway, variation and deviation, all possibly at night and in high seas. Many yachtmaster candidates might struggle to do this traditionally in the classroom let alone on a lumpy sea at night.

One of the techniques taught at Portishead is for the coxswain to start by steering known safe courses from the shore to the general location of the casualty and for the navigator to arrive at a compass course to steer as quickly



"Back flows and counter currents can pin a yacht hard against the supports"

The Trust has performed rescues in and around the Shoots and whilst there are some methods which can be said to work better than others, the nature of the area means that the situation can change from day to day and rescue to rescue. For example, by the actual bridge supports, back flows and counter currents can pin a yacht hard against the supports and on a falling tide this would most likely cause the yacht to slip

down the support on to rocks and break up. It is unlikely to be possible to haul a yacht off in such a situation other than very early in the flood or ebb. Any vessel disabled and caught in the area of differing water levels would probably likewise be in grave trouble. It might be able to hold to a strong anchor but the vessel could easily be capsized if it was swept into the boundary area between the levels. Outside this area, rescue is possible but sometimes only with great difficulty. Securing alongside and edging out upstream is likely to



quarter and abeam 5°. This produces an easily calculated vector for the navigator and enables him to quickly work up a course to steer. As this technique is accurate to within 0.5° it is well worth considering, given the time it can save. It is certainly a technique to use not just in rescue situations but also in normal cruising situations when a quick estimate of tidal effect is required. Not all rescues require this however; on small tides and in certain areas, traditional GPS use and working with Chart Plotter functions will suffice.

have a measure of success providing tows are kept to a sensible speed. Lifeboat crews need to appreciate this and a lot of their training is geared towards understanding the physics of towing and the effects of strong tidal flows on the towing process. Often the key is to turn downstream and into the still fierce by normal standards, but somewhat easier flows. In some cases it is possible to use tug boat methods, i.e. use the power of the RIB to push a casualty into easier waters, then either an alongside or ahead tow can be attempted. The crew needs



to be aware of the effect of a yacht's rudder in such a manoeuvre as it can be easy for the yacht to sheer off back towards trouble and it is important to try and keep directly astern of the towing vessel. Any suggestion of a sheer back into disturbed water will require quick reactions from the casualty's helm. It is probably advisable to have a lifeboat's crew member on board (usually the navigator) as the casualty's crew may well be too tired at this stage to react. Additionally the correct

securing of any tow ropes will be vital as the loads imposed can be very large. There is much to be said, providing seas are relatively flat, to run an alongside tow but in any sort of rough sea, an ahead tow will be the only option.

With steep seas, high tides and many dangers, the professionalism of the local rescue services is regularly demonstrated. The Portishead Lifeboat works with other local rescue services in providing a much needed service in some of the most unusual and

dangerous waters in the world. The challenges these waters offer, and how to deal with them, constantly occupy the coxswain and crews and their trainers. That there is no 100% right way of always doing things, given the unpredictability of these waters, adds to the challenges. From a training perspective there are few other areas which compare. The Shoots is high up there with the best, or is that the worst of them?

Peter Davis



Day out in the Shoots channel

AM High water 0830 Height above C.D. 14.1m
 Low Water 1550 Height above C.D. 0.2m
 PM High water 2110 Height above C.D. 14.5m

THE CREW

Peter Davis (RYA Instructor)
Dave Hodges (Senior Coxswain Portishead Lifeboat and RYA level 2 instructor)
Jon Colwill (Coxswain Portishead Lifeboat)
Dave Herbert (Senior Coxswain Portishead Lifeboat and RYA level 2 instructor)

THE BOAT

Ribeye 785 Sports with Yamaha F225 AETX 4-stroke outboard.

WEATHER FORECAST

South West 2-3 increasing 4-5 later.

The aim of the trip through the Shoots channel (Admiralty chart 1166) was to experience the phenomenon of strong tides in the narrow channel and to see the water at two different levels. We chose the biggest tide of the year to get the full effect of a 13.9 metre range. The River Severn has the second highest tidal range in the world, second to the Bay of Fundy in Canada.

As with most passages we met up in a local café and to take on the all important crew, fuel, and to check our passage plan; it was important that we all understood the plan, and that there were no bolt holes if things went wrong. So donned in dry suits and lifejackets, with flasks and sandwiches we proceeded to 'Robyn Charlie'. We had booked last lock out of Portishead Quays marina at 10.30. It took several minutes to lower down the 7 metres from marina level to sea level, and then we carefully picked our way through the channel to clear Portishead pier. Maintaining a moderate speed towards the Shoots channel some 5nm north east of Portishead, we kept a sharp eye out as we were expecting to see a large amount of

debris to be floating down stream on the ebb tide. We hadn't bargained on seeing a semi submerged shed with a bright orange roof, numerous gas cylinders and some large tree trunks with branches still attached - some were longer than the boat we were on.

Our optimum time to see the tide at its worst was 4-5 hours after high water, the tide here doesn't conform to 'normal' hours of ebb and flow, for example at Sharpness the tide can take four hours from low water to high water, but 7.5 hours to low water, so we stopped for a short time under the Second Severn Crossing where the tide was running at 9-10 knots. We proceeded to the original Severn Crossing taking care to avoid the shallow areas under the bridge. These were identified by looking at the surface of the water, and observing larger steeper sided waves which indicated shallower water and checking the wake, if the wake fans out at a shallow angle to the boat all is well, if it is at a large angle, watch out!

This proved a valuable familiarisation exercise for all on board as none of us had ventured up this far at low water springs. The sand banks, although well charted, can move laterally and increase in height by over a metre depending on how much fresh water is coming down the river. The tide at this point was running at 7-8 knots with plenty of debris still to avoid. On returning to the Shoots channel, we experienced a cauldron of confused fast flowing water, at one point recorded at 13 knots. The echo sounder was struggling with accurate readings as there is so much silt in the water; we knew we had between 17 and 30 metres of water, but it was still disconcerting when the echo sounder suddenly reads 1.2.

We held station under the bridge for about

an hour where we could see all sorts of strange water movements eddying around the main bridge supports; at one point we could see a large depression in the water estimated to be nearly half a metre deep, which looked like a large saucer.

We all had a spell on the wheel taking great care in the hand over. The person on the helm had to be very alert and react quickly with helm and throttle at times as the boat would suddenly veer off course. It was very easy to become mesmerised by the fast flowing water and could have been dangerous if we had been swept onto the unforgiving rocks which were at times only 10 metres away.

As the tidal flow decreased we drifted down towards Avonmouth at a leisurely 3-4 knots, eating our sandwiches and drinking coffee whilst reflecting on what had so far been a special day. First lock in to Portishead Quays marina was not until 18.30, so we motored off down channel to investigate the Middle Grounds sand banks off Walton Bay which have a charted drying height of 6.9 metres! On return to Portishead we approached the lock carefully, feeling

our way in as there wasn't much water in the entrance. Once in the lock, it took about 20 minutes to lift up, then we were back to the pontoon for a wash down and off home for a cooked meal.

We had a great day out exploring a part of the channel which not many people have experienced, but this sort of passage, although reasonably short, is not one for the ill prepared, or faint hearted.

Dave Herbert

