

**Angus the Hebridean wind vane takes on the Atlantic** *(a tale of repeated user errors with a happy ending)*

*[Angus is installed on Arctic Smoke a 1974 Elizabethan 33 - a long keeled, mid to heavy displacement cruiser, with the rudder hung diagonally on the keel - which is not particularly efficient.]*

Arctic Smoke left the UK in April 2015 bound for the Azores via Lisbon. She subsequently completed a full Atlantic circuit.

The previous year in preparation for the trip I had bought and fitted an Aries. It worked fine but was very heavy and I was concerned on two counts. One was whether the stern would prove strong enough to support the weight through the challenging conditions we expected encounter and another was that the weight of the Aries brought the stern down a couple of extra inches. Therefore, at the end of 2014 on the recommendation of my KIWI friend Chris, I bought a Hebridean kit and Chris who had already built his Hebridean (but had not yet used it) helped me build mine; or more accurately I helped him. I bought a drill press and we turned Arctic Smoke's saloon into a workshop over the next few months.

Angus was 'finished' only a couple of weeks before we set off. The 'we' being me and my pal Tony. I foolishly didn't undertake any sea trials before leaving and that was to prove a significant omission. Casting the lead-shot counter balance weight was one of the last jobs. We got the epoxy mixture wrong and the whole thing fell apart and scattered all over the saloon floor when we removed the cast. Time was pressing and so we swept the mess up and tried again. This time it all stuck together but what we didn't realise at the time was that we had lost a significant amount of lead shot into the bilges and therefore the weight was rather lighter than it should have been. This was to cause us a great deal of grief in the weeks ahead.

A week or so later in late March 2015 we left Chatham on a bright sunny, if windy and chilly day with three crew, another pal, Murray joined the boat for the leg to Plymouth. For reasons that escape me other than bone idleness on my part, Angus didn't get a look-in on the legs down to Plymouth. Perhaps I was secretly worried about whether he would work properly but whatever the reason we simply relied on the tiller pilot when we got bored with hand steering.

It was only after our departure from Plymouth that we attempted to press Angus into service. He didn't work at all, even after we figured out that the counter weight should be pointing into the wind and not away from it. The weather was fresh – we were beating into a lively south west wind to escape the western approaches and it was bloody cold. Conditions were therefore not ideal for setting up a wind vane for the first time and so after a few hours of fiddling about and reading the instructions we reverted to the tiller pilot. It was brand new. It lasted for about 24 hours before it burned out and so we ended up hand-steering all the way to A Coruna!

Whilst in Coruna we went through the instructions yet again and adjusted the angles of the tiller lines and moved the hook on the tiller further back to get more power. We then day hopped round to Vigo with no noticeable improvements in Angus's performance. We took time off in Vigo to rendezvous with our ladies in Lisbon – the

original plan had been to get the boat down there in time but we were behind schedule. Sharon my wife flew out with a new tiller pilot.

Whilst in Vigo we fiddled around with Angus some more, including adjusting the length of the counter weight rod and to our great relief Angus was at last able to steer the boat – sort of. But he could not be left on his own for very long. By the time we got to Lisbon, we had made numerous further adjustments to just about every one of Angus' moving parts and to all the various pulleys and lines attached to him, and were reasonably happy and were confident enough to carry on with the trip. We were not however, 100% satisfied. There was one more thing we needed to check – the counter balance weight. I had previously emailed John Fleming the designer to ask his advice which helped with our earlier modifications and having relayed the latest symptoms to him he recommend we check the counter-balance weight. To do that we needed accurate electronic scales – but could not find a set anywhere. Then quite by chance we bumped into a young couple on their Nicholson 36 and discovered they not only had a set of scales on board but also some lead sheet! We quickly discovered that the weight was light by a few ounces. The solution was to cut a strip of lead sheet of the required weight and wrap it around the counter balance weight. As a temporary measure, we tapped the weight and fastened the lead strip onto it with a screw (like many of my temporary fixes that one is still in place). Finally, therefore, we were hopeful that the combination of trial and error, John's excellent after sales service and the final ingredients of the scales and the lead sheet had resolved all the issues. However, we would have to wait for some more challenging conditions before we could sure that all was well.

Our next leg was to Madeira on a close reach in fresh winds and some pretty big seas. During this leg one further problem presented itself. The force of the large waves repeatedly pushed Angus up out of the water and he therefore lost control. Even after tightening the friction bolts to the maximum this remained a problem. The instructions suggest using a split pin or similar to which would be strong enough to prevent this but which would break if the pendulum encountered an obstruction. With Arctic Smoke's keel hung rudder protecting Angus, he was not going to be damaged. I therefore inserted a stainless-steel bolt through the mounting beams just behind the pivot assembly to prevent Angus from rising up. With that done, Angus performed entirely to our satisfaction. It was perhaps not the most onerous test because Arctic Smoke will almost steer herself under such conditions (indeed crossing Biscay we were able to lash the helm for lengthy periods). We had no cause to reprimand Angus for the rest of the 2015 cruise. Indeed, he became quite taken for granted.

Angus's sternest test was still more than a year off by the time Arctic Smoke arrived in the Canaries in August 2015. She remained in Pasito Blanco for the next 12 months. I returned in September 2016 to prepare her for the Atlantic crossing. My friend Mick joined me for the crossing and Caribbean cruise and before departing in November, he gave Angus a thorough service including tightening various nuts and bolts that had worked loose.

The first big test for Angus came a few weeks later, on our crossing to Martinique. We soon picked up fresh trade winds and with the wind from behind ran under twin headsails – the genoa boomed out with the main boom and a jib hanked on to the emergency forestay poled out with the spinnaker pole. Within a few days the wind

was blowing Force 6-7 and we were running under a deeply furled genoa and a small jib. The seas were far and away the biggest I had ever experienced and they were usually coming from both quarters as well as from astern. With her classic long and narrow under water profile, Arctic Smoke rolled horribly as her stern was lifted and pushed to one side and then the other. This also pushed her off course but providing the wind strength was reasonably constant Angus recovered her heading unaided. This was the case for most of the first two thirds of the crossing. In the later stages, however we were pummelled by frequent squalls and sometimes, despite Angus's best efforts, Arctic Smoke was slewed round so far that one or other of the headsails would back. With enough time, this was self-correcting as the backed sail pushed the boat's head back on track. However, the forces on the rig when this happened were enormous and the whole boat would shake as the backed sail first went slack and then filled with a mighty snap. In these conditions, it was necessary to help Angus counter the effect of the stern being pushed round by applying some extra force on the tiller. For the vast majority of the time however Angus was able to cope unaided. It may be that moving the tiller attachment a little further back towards the rudder shaft may improve Angus' response time still further but that's an experiment yet to be undertaken.

During that last week of the crossing (we travelled the 2,200 miles in 16 days with an average speed of just under 5.5 knots) Arctic Smoke dealt with the biggest and most confused seas of the entire circuit together with frequent squalls of near gale force strength. However, it was not until the passage from Bermuda to the Azores in May 2017 that we experienced our first full and sustained gale. Between times, I sailed on my own from Jamaica around the south and north-west coasts of Cuba, through the Florida Straights and the Bahamas to Bermuda. During this period, I encountered the full range of weather conditions short of a full gale. I rarely if ever had to help Angus with the steering. Indeed, even in the most unfavourable conditions – very light airs from astern - Angus was able to steer a course.

It was not until this period that I fully comprehended how the various forces at work interacted with each other and how they affected Angus and was therefore able to work out the best approach to setting him up. After hours of observation and numerous mistakes, this is therefore my take on setting up a Hebridean ...

*Compensating for weather helm is key and is best done before making final course adjustments. More sail will of course produce more weather helm and there's a limit to how much weather helm any type of wind vane system can cope with. So, if you want your wind vane to do the steering it's essential to manage weather helm by setting the optimum sail plan for the wind strength. Once the vane is clearly responding to changes in the apparent wind direction by moving from side to side and the whole assembly is at right angles to the boat, you've got it right. Then you make 'final' changes to the angle of the vane to achieve the desired course. As the passage continues, changes in wind strength will of course then alter the amount of weather helm. Significant gusts and lulls produce greater and lesser degrees of weather helm and can be compensated for by moving the chain from side to the other. When you run out of adjustment it's time to reduce sail. With Angus, there's also the question of which vane to use. I have three but have only used two. The largest is the standard vane as per the instructions except I cheated and covered the frame with car windscreen sun protection fabric and held on with Gaffa tape! This*

*vane is needed in light airs to generate sufficient power. In stronger winds, it bends and it's then necessary to use the smaller ply-wood (6mm I think) vane which is about two thirds of the size. I have never used my 'storm vane' which is about half the size again.*

On the passage between Bermuda and the Bahamas (I was joined by another pal for that leg) we used the standard rig of main and boomed out genoa in preference to a twin headsail rig. This therefore, is how we were set-up when the gale arrived. I'd chosen this sail plan partly because it's more flexible and partly in an attempt to minimise rolling (which I think it did). The main disadvantage was increased weather helm and so Angus had to work harder. Fortunately, whilst fitting out in Pasito Blanco I had a fourth reef inserted into the mainsail. The fully reefed sail looked tiny when I first tested it and I was worried that I had over done it. However, when the gale arrived and we reefed down I realised it was indeed just what was required. With the wind from astern or off the quarter, a scrap of genoa boomed out to windward and the four reefs in the mainsail, we left Angus at the helm, put the washboards in and went below. VERY occasionally in the strongest gusts and biggest waves, the mainsail would back (a full gybe was avoided by use of a preventer on the main boom and the sail area was small enough to ovoid over pressing the boat). When that happened I had to get out into the cockpit and steer the boat back round. Occasionally I had to complete the gybe by easing the preventer and re-setting it on the other side. Not a pleasant task.

A couple of other thoughts on the Hebridean...

*A much less fiddly means of connecting the pendulum rudder to the top part would be useful. The current hinge design makes taking the Hebridean apart a real chore.*

*A remote control system to avoid one having to go right to the stern of the boat to adjust the angle to the wind would be a big plus too.*

To sum up – one he was set up properly, Angus was wonderful and I'll never go sailing again on Arctic Smoke without him!