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Patriot rudder loss 2018 Sydney to Hobart case study

Late on the first day of the 2018 Sydney to Hobart Yacht race, while heavy running in 20+ knots with an A2 Spinnaker, staysail and full main the SYC yacht Patriot lost it's rudder. Patriot was owned and skippered by Jason Close, a J133 which was acquired approx. 12 months before hand, and had previously done the S2H race under a different owner. The yacht was unmodified since new and faultlessly prepared. Jason had skippered several ocean races previously and had on board several experienced ocean racers (3 others were skippers/watch leads, 2 had done the Osaka race, 2 were SSSC instructors or assistants, 1 was an NEA safety auditor, 1 had been involved with the Sydney to Hobart Georgia rudder loss and subsequent sinking several years before hand. Nobody had experienced drogue steering however with full rudder loss but had setup drogues previously as practice.

The race started in a moderate Northerly breeze so competitors were all running under spinnaker down the coast. It was fast but controlled sailing, there were a couple of round ups due to sea state but nothing too dramatic. We were tactically heading offshore for the current, so when the rudder broke we were approx. 50Nm offshore. The reason for the rudder loss is unclear, most likely due to an impact with a submerged object since the rudder broke while the yacht was tracking straight surfing down a wave under light load. The boat continued to track for another 10 seconds or so before rounding up.

An "all hands" call was made by the skipper who was helming at the time, the first priority was retrieving the spinnaker safely. A decision was made to drop the spinnaker in the water, which proved a great option as it unloaded the spinnaker immediately and allowed the crew to quickly pull it in. Next was the staysail, which was dropped quickly and sent below decks. Interestingly the boat then naturally hove to under full main, providing some peace and stability for the crew to determine the next steps. A check of the rudder bearing indicated there was no water ingress fortunately. The navigator had by then put out a radio call, a general securite call as it was not considered a Pan Pan or Mayday since we were safe and secure with plenty of sea room. Interestingly a couple of nearby yachts were not monitoring VHF16 which made warnings to keep clear difficult, especially later in the dark.

At that point Jason left his 2IC (Greg Coutts) on deck to manage setting up the emergency steering, it was in good hands given the experience on deck at the time. Meanwhile Jason got involved with communications and contingency planning. There was a Bourke sea drogue, a short length of chain and a swivel at the drogue end, a long single warp into a spliced fitting where the bridal sheets were attached. After reviewing the setup it was noted the sheets on the bridal were far too short, these were lengthened with spinnaker sheets and led through the brace blocks beam max and then onto 2 winches. We had by then dropped the main into a 3rd reef and hoisted a storm jib but the yacht span uncontrollably meaning we couldn't launch the drogue effectively as we couldn't track straight for long enough.

Eventually playing around with sails we managed to pull tight against the drogue and then started tracking straight under jib alone. The danger from the boom was seen to be too great and the boat wouldn't track so the main had been already dropped. We had plenty of diesel so it was decided to motor sail slowly. We were concerned at the time about the thickness of the warp so kept speed to around 3 knots (which later under tow proved we could have gone faster but at the time we were being cautious). In hindsight we should have tried trysail as well for additional balance and a little more speed. The shape of the hull and length of sheets meant the effect of going to beam max was negated as the sheets ran next to the aft cleats anyway.



It was difficult to track straight with the yacht hunting to port and starboard, although some adjustment of sheets and sails got it going straighter. Unfortunately, not having a swivel shackle at the bridle end meant we got bad twisting which effectively shortened the bridle and increased the poor tracking. We settled in to a slow and steady 3 knots heading towards land but relayed to the navigators that we could not go to windward, only reach. This information was provided to the navigator and skipper who determined an initial plan to head to the safe waters of Jervis Bay, later changed to Ulladulla due to facilities there. Lesson learnt, pre-plan safe havens to match the yacht's draught.

A nearby Navy vessel decided to stand by us which was comforting but not really necessary. Apparently they tried launching a rib to tow us in but damaged it in the process of launching. They were useful for getting attention of other competitors not monitoring VHF16 by light and horn, to keep clear of us and the drogue.

Early the following morning a Marine Police boat arrived to tow us in. The skipper accepted a tow, so we set up a towing bridle onto bow cleats through the fair leads. The Police boat initially went approximately 9 knots which was way too fast, with the yacht hunting dramatically. It was quite uncomfortable and led to the shearing of the fair lead on Port side and snapping of the bridal rope. Lesson learnt – don't use fair leads and keep the speed down, perhaps re-rig to mid aft instead of drogue bridle. We re-tied the towing bridle, doubling up the rope and added chafe protection around the forestay and adding load sharing ropes back to the primary winches and resumed at around 5 knots. Lesson learnt – we should have had a better dedicated towing bridle with chafe protection rather than rely on thick mooring lines. Also even Police boats often don't know the best setup, fortunately we had on board an experienced ex Police current Port Phillip sea pilot skipper who had himself towed many boats in the heads, so he determined the best approach. The revised setup worked well and was used the whole way in, we settled to 5k approx. speed, even then we moved around a lot. See <https://youtu.be/xEgMMtm3rd4> to watch how the yacht behaved under tow.



Docking proved challenging, but M3 another competitor yacht who had lost a mast was on station and helped throwing long lines to us. We were docked around 5pm, almost 24hrs after the rudder loss, thanking the Police for their help.

A dive by one of the crew found the rudder had sheared off level with the hull, there was no obvious reason why. The rudder was all carbon construction, the factory rudder. Shipwrights later confirmed we probably hit something.

Summary of lessons learned:

- Ideally have a dedicated emergency tiller and rudder box setup on the stern – wouldn't want to be on a lee shore with drogue steering
- Longer sheets and definitely a swivel at the bridle end of the warp. Weight of chain and swivel at drogue end saw the drogue sit well 2 wave lengths back from the boat. Warp and drogue size was right for the boat, a thicker warp would have been comforting though.
- 3 knots is about all you can do safely under drogue steering we noted. Current and moderate winds meant we couldn't go to windward.
- Without the drogue we wouldn't have been able to be towed.
- A dedicated towing bridle setup with full chafe protection is a must, ideally load shared to winches.
- Pre-plan safe havens before heading out, particularly those which cater to deeper draught vessels and understand available facilities.

Australian Sailing Special Regulations requirements for emergency steering are well founded, they should be adopted by anyone heading offshore whether cruising or racing. But its not enough to carry them, you must set them up to suit your yacht.