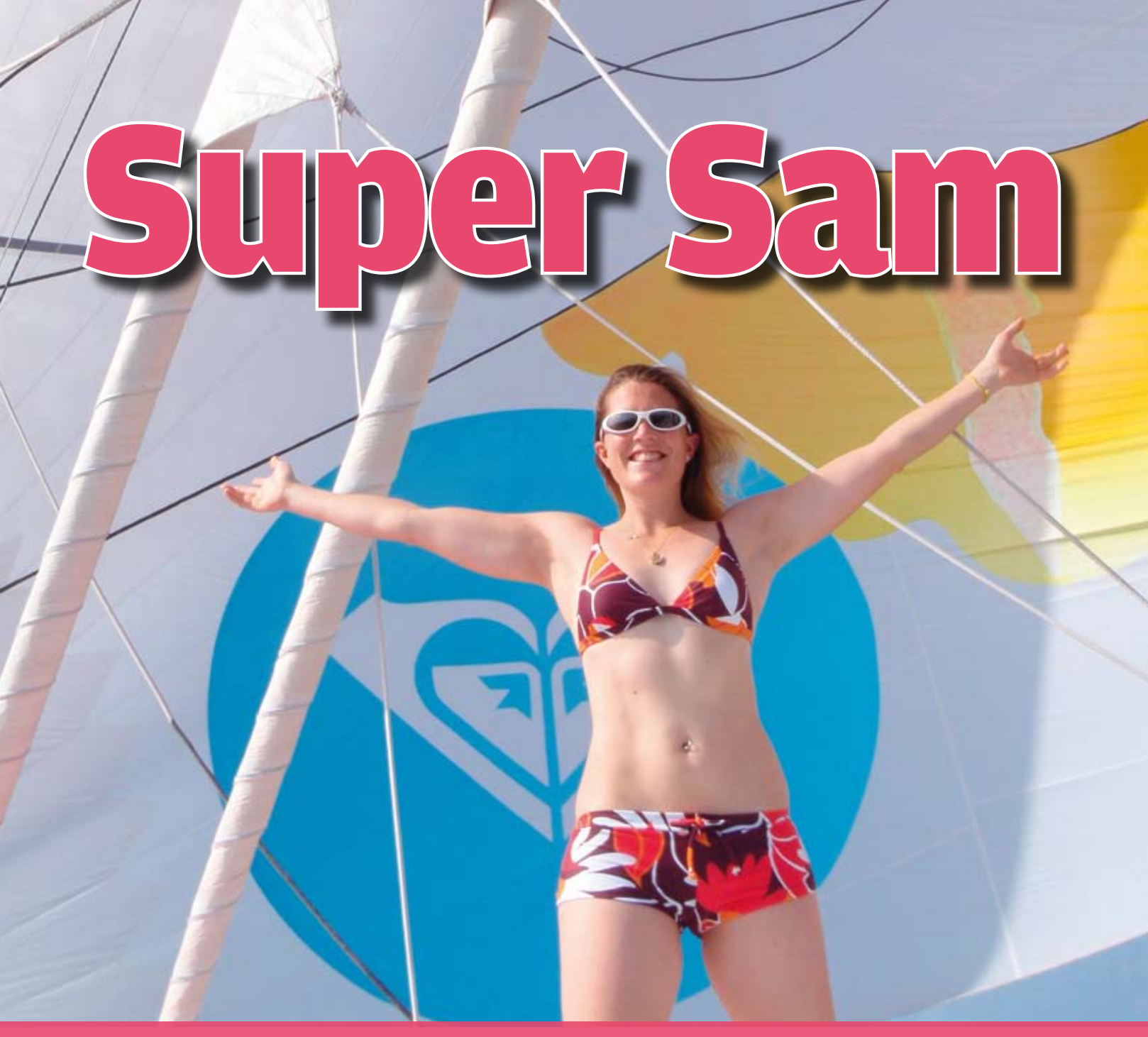
Super Sam



In the wake of Ellen MacArthur comes a new British star, one of only 11 of the 30 starters to make it round the world non-stop in the 2008/9 Vendée Globe race, and first Briton home. Peter Poland explains the challenges of sailing an Open 60 and charts Sam Davies' career so far

Peter Poland crossed the Atlantic in a 25ft (7.6m) yacht in 1968 and then spent 30 years as co-owner of Hunter Boats

Sam Davies' fourth place in the latest Vendée Globe race is being hailed by experts as remarkable. Her boat, *Roxy*, won the last two races but is now decidedly outdated. Sam revelled in conditions that saw other boats dismasted, or otherwise damaged. In France they're saying she sailed a tactically 'beautiful' race.

And in contrast to the kind of messages home we're used to hearing, telling of anguish, struggle and problems, Sam's diary was fun and fizzy, matching the photos she sent back of herself posing in pink fashions from her sponsor Roxy, the surf-wear brand. She made it look easy, but behind her achievement lie years of dedicated study and practice in the skills of singlehanded ocean racing, and a brain – according to a French sailor – 'the size of a planet'.

An Open 60 is something else – everyone told me so. But my first acquaintance with one still took me aback. It was stationary, moored in a marina, but heeled right over on its side. How could that be, I wondered?

As I got closer, the reason became clear. 'Welcome aboard,' said Sir Robin Knox-Johnston (for it was he, preparing for the Round the Island Race the next day). 'I've canted the keel. This makes the boat heel over, so you can scrub the hull on the opposite side.' Obvious really. Silly me. At the push of a button, a giant hydraulic ram inside the cabin cants the keel up to 40° either side of vertical for huge amounts of extra power. 'And while you are down there on the pontoon,' he added, 'do me a favour and clip this halyard onto that sailbag beside you will you? It's a genoa. It's too heavy to lift on board by hand.'

I was already beginning to appreciate the quirks of these most extreme and fearsome of yachts. Sir Robin (of bus pass vintage) was aiming to race his Open 60, aptly renamed *Saga*, single-handed around the globe in the 2006 Velux 5 Oceans Race.

Sir Robin, of course, was the first person to sail single-handed non-stop round the world, back in 1969. Forty years later, the first Briton home in the Vendée Globe singlehanded, non-stop round the world race was a new sailing star, Sam Davies.

My own Open 60 race, round the Isle of Wight with Sir Robin, was in wind barely exceeding 10 knots. Even so, with monster gennaker unfurled, a grinning RKJ still got the beast up to an effortless 13 knots in flat water.

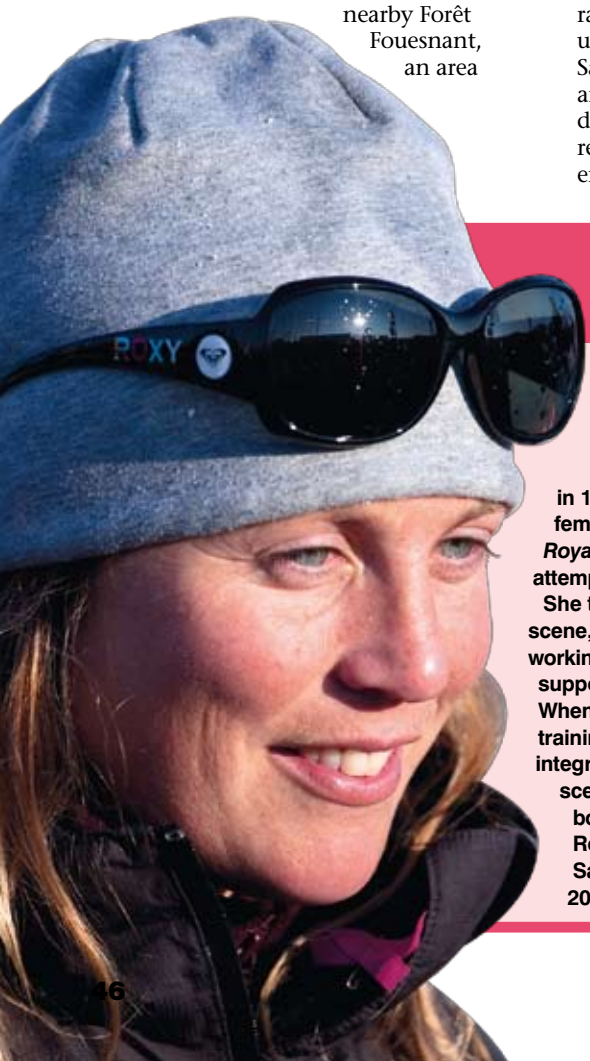
At the time that I crewed on Sir Robin's Open 60, I had already heard of Sam Davies. I knew that she had joined the band of merry loonies who race 21ft (6.5m) cockleshell Mini-Transat yachts single-handed across the Atlantic; and in the 2001 race she finished a creditable 11th. And, a bit like Ellen MacArthur, she needed to settle in France to get onto the higher rungs of the solo sailing ladder. She learned the arts of the solo sailor at the prestigious Breton Academy, the 'Pole France' (in Port La Forêt), a racing squad of predominantly French solo sailors honing their skills. Her home is now in nearby Forêt Fouesnant, an area endearingly nicknamed the 'Vallée des Fous' (Valley of madmen) after the large number of solo sailors who live there. And Sam also has a Cambridge degree in engineering. So she's mega bright as well as a dedicated sailor.

'My first solo voyage in *Roxy* was a round-trip to Newfoundland'

Intensive training

Sam then embarked on four years of intensive sailing, completing Solitaires du Figaro and Transat AG2R races. Figaro events are the traditional proving grounds for the best solo sailors in the world. Sam told me: 'I could not have done so well in the Vendée if I had not moved to Brittany and I certainly couldn't have done it without what I learned in the Figaro.' For those in Britain not familiar with the 10m (33ft) Bénéteau Figaro (you'll never see one at a UK boat show), this is no standard cruiser. It is a sophisticated flying machine with a deep fin keel, twin rudders, tall rig, huge symmetric spinnaker and very basic interior. And it's a strict One Design. Skill, strength and courage alone separate the winners from the losers. And Sam excelled, coming 2nd of the first-timers in the 2003 Solitaire du Figaro.

After the Figaro Class, she graduated to an Open 60. And her sponsor, Roxy, backed a brace of winners in Sam and the relatively dated 'PRB', an earlier generation boat that won the two previous Vendée races. The now re-named *Roxy* had been updated (with a new keel and rig) before Sam took her over, then designers Finot and Conq replaced *Roxy*'s single central daggerboard with two more efficient retractable boards, one each side. These enhanced the boat's windward performance. Sam told me: 'I also used to work for Harken so I fitted new Harken winches. I was able to select the ideal gearings to make it easier to hoist the heavy mainsail with the new coffee grinder. Now I've had the boat on the water for a long time, I know it so well. Our first solo voyage was a three week round trip to Newfoundland.' Strewth, that's some 'shake down' trip.



MAIN *Roxy* sailing on a high-speed reach
ABOVE Sam sailed from an early age
INSET RIGHT Jubilation at crossing the Vendée Globe finish line

Sam Davies biography

Now age 34, Sam grew up on Hayling Island and first went sailing at the age of one week. After gaining a Masters degree in materials engineering from Cambridge, her first job out of university in 1997 was as part of Tracy Edwards' all-female crew aboard the maxi-catamaran *Royal and SunAlliance* for their ill-fated attempt on the round-the-world record. She then joined the French offshore sailing scene, starting in the Mini Transat class, before working her way into the Figaro circuit, supported by Ellen MacArthur's OC Group. When she moved into the Open 60 she began training with the elite Pole France squad and integrated with the close-knit solo sailing scene in Brittany, where she lives with her boyfriend Romain, a fellow Figaro sailor. Roxy is said to be interested in sponsoring Sam and a new boat for the next race, in 2012, but is looking for a partner.

Mind-boggling

In autumn 2007, Sam completed the double-handed Transat Jacques Vabre Race with Jeanne Gregoire and finished tenth. Then the race back to Brittany from Brazil, the Transat Ecover B to B, was her first single-handed transatlantic race on *Roxy*. She finished seventh out of the fleet of 20, which included the top names in solo offshore racing; a remarkable performance that made all Open 60 solo sailors sit up and take notice of 'la belle anglaise' as she was nicknamed.

But before moving on to Sam's Vendée exploits, you need to understand what an Open 60 is, and what it takes to sail one. The facts and figures are mind boggling.

This is a 'restricted' class rather than a One Design. So while length is restricted to 60ft (18.28m), draught to an awesome 4.50m (14ft 9in), and the hull (with keel still attached of course, several have fallen off) should be self righting, almost anything else goes. So there is plenty of

scope for development, which explains why Sam's nine-year-old *Roxy* was at a disadvantage to the latest generation 60s.

Roxy's beam is 5.4m compared to the Farr-designed 2007-built winner Foncia's 5.85m and the even more powerful Kouyoumdjian-designed *Bahrain Pindar*'s 6.4m. But, far more relevantly, the latest generation Open 60s feature chines. Previously, chines were used on dinghies like the Enterprise, for the simple reason that this was the easiest way to bend plywood panels into a 'boat shape'. Then in the mid-1990s, astute designers re-discovered them. David Thomas incorporated chines in the aft sections of the Hunter 707 planing sportsboat.

'Why?' I asked him.

'Ah,' replied Thomas enigmatically. 'Water likes chines. They tell it where to go. And the resulting flat run increases waterline beam aft and helps the boat to surf earlier and for longer. Chines are also like railway lines and add to directional stability.' On large yachts like Open 60s and Volvo 70s, the chines also enable the flat run under the boat's stern to be wider without increasing overall beam – because the topsides above the chine become almost vertical.

So Sam's pre-chine era *Roxy* was slower than the latest, and far more powerful, Finot, Farr, VPLP, Owen and Lombard designs.

Heavy work

Then what about the sail wardrobe that propels an Open 60? A mainsail typically weighs around 110kg and has an area of around 160sq m. Then there are three working headsails: Genoa (around 130sq m, 60kg), Solent Jib (85sq m, 55kg) and No4 Jib (40sq m, 25kg). Most skippers keep all three hoisted (rolled around their separate stays) and unfurl the right one for the conditions. The reaching and running sails comprise big and small gennakers, big and small asymmetric spinnakers (with snuffers), a reacher and a Code Zero. That's six fat sausages to cart around inside the boat (putting weight where it's needed) then haul through the hatch when being used. Heavy work. The big spinnaker, for example, is typically around 400sq m and weighs around 40kg.

The masts up which these huge sails are hoisted are carbon fibre and almost all have PBO standing rigging; no aluminium tubes or steel wires on these rigs. But the methods of staying the masts (between around 26m on old boats, up to 30m on new ones) vary. Older boats like *Roxy* have conventionally stayed multi-spreader masts. The latest boats (like winner *Foncia*) have wing masts that rotate and are supported by stays attached to giant deck-level outriggers.

Keels also vary. Most (including

Vendée Globe Race facts and figures

Fully deserving of the title of 'The world's toughest yacht race', the Vendée Globe is a singlehanded, non-stop 27,000 mile dash around the world.

This time around, Michel Desjoyeaux won in 84 days –a week ahead of the next boat. Whichever way you look at it, that's a staggering achievement.

It was a punishing race, with a high rate of attrition. Out of a record 30 entrants, 19 retired – of which 5 were dismasted; 4 had rig or sail damage; 4 suffered keel damage; and 3 more damaged their rudders. Yann Elies fractured his femur and was rescued by the Australian Navy, Bernard Stamm ran aground in the Kerguelen Islands and Alex Thomson retired with hull damage after a collision with a trawler before the start.

2008/09 RESULTS

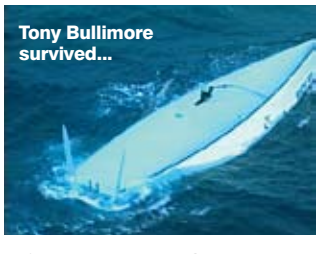
1st: Michel Desjoyeaux (FRA)
2nd: Armel Le Cléac'h (FRA)
3rd: Marc Guillemot (FRA)
4th: Sam Davies (GB)
5th: Brian Thompson (GB)
6th: Dee Caffari (GB)
7th: Arnaud Boissières (FRA)
8th: Steve White (GB)

YOUNGEST ENTRANT

■ Ellen MacArthur was only 24 when she came 2nd in 2000, making her the youngest ever entrant. The oldest was 62-year-old Jose de Ugarte, who competed in the 1992 race.

FIRST RACE

■ The first race was in 1989/90, and won by Titouan Lamazou. Subsequent winners are:
1992/3: Alain Gautier
1996/7: Christophe Auguin
2000/1: Michel Desjoyeaux
2004/5: Vincent Riou
2008/9: Michel Desjoyeaux


Tony Bullimore survived...

NOTABLE BRITISH RESULTS:

■ Ellen MacArthur was 2nd in 2000, and Mike Golding came 3rd in 2004, finishing without his keel. The 1996 race saw Pete Goss' legendary rescue of fellow competitor Raphael Dinelli and Tony Bullimore rescued by the Australian Navy after he became trapped in his upturned yacht.

Roxy's) cant up to 40° to either side, generating huge extra power when sailing on a beat or a reach. Sam's *Roxy* has a keel bulb weighing about 3 tonnes while the more powerful Foncia has a bulb of around 4 tonnes (part of around 8 tonnes all up). Massive hydraulic rams to shift this lot take up much of the cabin space. The ballast bulbs are lead and the slender keel foils to which they attach are either machined steel or carbon fibre. *Roxy*'s foil is steel (as is winner *Foncia*'s), so less prone to damage than a carbon fibre one if rammed into a whale, growler, container or tree.

Water ballast

But the keel is not all there is to ballasting these beasts. Open 60s incorporate water ballast tanks. Typically these are arranged on either side of the boat to add power when sailing heeled; back aft to keep the stern immersed when surfing with the front half of the boat out of the water; and sometimes forward to depress the bow and lift the stern to reduce drag when beating in light winds. Shifting water ballast from tank to tank is a time consuming task. Amazingly, Guillemot raced *Safran* the last 1,000NM with no keel (it fell out), relying on ballast tanks to avoid capsizing and daggerboards to reduce leeway.

So Sam has a heavy workload. A French journalist crewing on a Vendée competitor's Open 60 reported that it took 40 minutes (and 33 separate actions) to tack the boat and 20 minutes (with 12 separate actions) to gybe it. Now imagine doing this at night, in wild seas and strong winds, in the Southern Ocean. And these boats are not raced dead downwind; they go far faster by gybing through a series of shallower angles.

There's one further weapon in the solo sailor's armoury. The auto-pilot. And this has come a long way, bearing little relationship to the simple fluxgate compass-controlled 'push me pull you' ram attached to a tiller or overgrown rubber band connecting a steering wheel to a motor that most of us use.

French firm NKE and British B&G lead the field in Open 60s. Their new auto-pilots are astonishing. As he chased down the fleet, race-winner Michel Desjoyeaux left his NKE auto-pilot in charge for days on end. And Sam told me, '*Roxy* was on NKE-pilot almost all the time. If I helmed, I got more tired and could have made mistakes, and anyway I was often too scared to take the helm. On a reach, it was set to steer a compass course. But downwind, it steered to the true wind angle. Over the whole Vendée, it was about 50/50 compass course or wind direction.

The secret to both the NKE and B&G gear is the accuracy and speed with which the 'sensors' (wind speed, direction, boat speed, heading etc) collect data, stuff it through a high-capacity processor, then transmit continuous corrections via the powerful hydraulic ram connected to the rudder stock(s). It also makes allowance for true versus apparent wind speed and direction, and the boat's angle of heel and pitch. These new-generation pilots have several 'sensitivity' settings and the makers are now working on a new facility called 'gust'. When the boat's reaching, the auto-pilot will luff up in a lull and bear away in a gust. Incredible. Of course this level of sophistication does not come cheap, but if you want to average around 20 knots across the Southern Ocean, it's worth it. As long as the automatic alarms (for wind and course changes) are awake, the skippers can shelter and even sleep below while the autopilot does the job.

'I'm not intimidated by gybing *Roxy* into Cape Horn'

That's how Sam can sit at her chart table down below and broadcast that the boat is averaging around 20 knots and all is well. Her NKE is taking the strain. The wonder of modern auto-pilots also explains how Sam could take so much video footage of life on board. Some clips show her up at the masthead, others show her preparing what answers for food on the single burner cooker down below. And all the while, the auto-pilot steers.

Sam with family and boyfriend Romain, at the Vendée Globe finish at Les Sables d'Olonne

Sam scribbles on a bulkhead the record she's aiming to beat (87 days, 10 hours, 47m, 55s)

Sam working at *Roxy*'s navigation centre – along with a couple of furry friends!

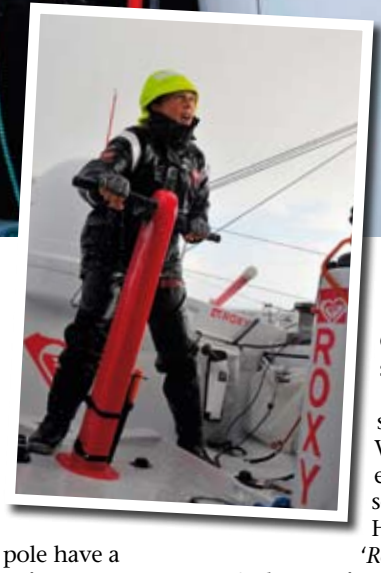
What's life like on an Open 60?

Sam's messages back to base painted vivid pictures. For example there's the maintenance and DIY needed on a boat sailing at full chat.

Sam's knowledge as a mechanical engineer helped and one message shows the challenges involved.

'*Roxy* last night decided to give me some technical challenges. The first was one of my alternators failing to start up. I have two, plus other ways of charging, but down here with the pilot on high gain settings, we are using quite a lot of electricity and working alternators are imperative. Luckily, after chasing cables I found the loose connection and the repair was an easy one. Obviously *Roxy* was not happy that I had fixed her so efficiently, so problem number two quickly arrived. I had just changed down to staysail as there was 35-40 knots of wind, and when I went to cant the keel back up... nothing happened! I have a back-up manual pump on my keel system, but it takes all day pumping to move the keel just a tiny way, so that's not really an option. So, in the dark, with my head-torch, voltmeter and tools, I found myself head-first in the batteries and keel hydraulics as *Roxy* hurtled down the huge waves at break-neck speeds! I would have much preferred to be in bed, but in this race, a problem must be fixed immediately to ensure it

A Christmas message to home



Yvan Zedda

Sam working at the coffee grinder in fair weather (above) and foul (right)

does not get worse. Luckily, again, I singled out a faulty solenoid and managed to re-cable the system to bypass the defective part.'

Sam later told me, 'I had all my tools with me. But *Roxy* was well sorted. I went up the mast to check things over, and found that the headboard lashing was damaged. So I dropped the main and replaced the lashing. The whole operation took less than 40 minutes.'

And what about running down towards Cape Horn? Sam wrote, 'We are sailing downwind, so that means we have to gybe our way in to Cape Horn and zigzag through on the best course. Easy said, less easy done, in 30 gusting 45 knots of wind and 5-7m seas! A gybe is quite a challenge, and during the manoeuvre, the boat, her sails, and her skipper are more vulnerable to the power of the sea. This is where I am so grateful for all the training I have done in the last two years. So now that hard work pays off, and I'm not intimidated by gybing *Roxy* into Cape Horn in these tough conditions. I respect the power of the sea and I am taking great care with every manoeuvre I make.'

And then there is the racket endured when living inside a carbon sound box. Sam describes it: 'Yesterday *Roxy* was making several noises, aside from the general vibrations of water crashing around at 20 knots past a carbon hull. The daggerboard 'sings' at a fairly high pitch, which changes every time *Roxy* accelerates over 18 knots. The bobstay vibrates in a low pitch each time *Roxy* stuffs her nose into the wave. The understays of the jockey pole have a separate tone, like strings of a guitar, as they skim through the waves, and occasionally there is a bigger disturbance if the pole itself gets dipped in. The propeller sometimes hits resonance too, and sings from underneath the chart table. The keel occasionally 'clacks' if *Roxy* jumps over a big wave, as the whole system is slightly flexible and the rams move within their bearings. If there is a big gust, I can hear the rumblings of the air bubbles in the rudders as they cavitate whilst trying to keep control. All of the above noises are 'normal' and create a really special kind of music that I am now totally in tune with. Quite often I will wake up and not know why, but know that something is not right. As I am so finely tuned into the sounds my little boat makes, I can sense immediately any change. It is better than any alarm clock, as I know I will wake up if I'm needed, and if all is OK then my boat lets me sleep!'

But perhaps the most striking aspect of Sam's Vendée is the delight and enthusiasm with which she seemed to treat each day. Here's just one example. '*Roxy* and I have had a great 24 hours of super-fast sailing! The wind has been between 35 and 40 knots and we've been hooning along. A couple of "oh crumbs how is this one going to end?" moments when I found myself clutching the chart table a bit tight as we careened sideways off a big breaker – but each time *Roxy* just picked herself up, shook off the water, and lined up the next wave.'

What's next?

So what next, one wonders? Sam has come a long way and proved that she can not only compete with the big boys, she also relishes every moment afloat. I wager there will be a new and more competitive Open 60 round the corner. 'That's my dream,' she told me, 'and I am working on it.' Then we will see whether true Brit girly grit can push the macho gallic males off the podium.

For more on Sam Davies and *Roxy* visit: www.roxysailing.com