Yeoman XXX

NEIL RUSCH takes a look at the Aisher flagship *Yeoman XXX*.

ROBIN Aisher's new mini maxi *Yeoman XXX* leaves most sailors ogling. This is understandable because what you are viewing is the accumulation of a lifetime of experience racing yachts. Each item, every combination of equipment is the owner's deliberate choice and gives any serious racer pause to ponder.

Aisher's experience goes back to when he started sailing with Charlie Nicholson's son Peter on a humble little class boat called the Hamble Star. He was also racing with his father on the 1951 Fastnet race winner *Yeoman I* and went on to campaign his 5.5 metre boat through to the Olympics. Serious offshore racing in a series of Yeoman's followed. The new boat is Aisher's next step. A step which according to *Yeoman XXX*'s builder Eric Bongers cost two million rands. "*Yeoman XXX* is a 2 million rand boat," he said "give or take a few grand."

UNFAMILIAR SCALE

But it is perhaps the scale of the 72 footer which leaves many boatowners to do their mental accounting or just gawk. To put things into perspective we might cite the fact that for instance the reef patch on the leech of *Yeoman*'s Kevlar mainsail is roughly the size of a Sprog main and costs the same as a new Sprog! Then again the locking headboard car system on *Yeoman* cost the same as the Lipton cup winner *SX Stainless Steel* when the L26 was purchased for R30 000 several years ago.

The mast and sails cost approximately R330 000 and R350 000 and alone would be sufficient to buy a well-equipped 40 footer. The builder maintains that while the rig and sails represent roughly a third of the overall price the remaining two thirds was equally spent on hull/structure and equipment/hardware.

FINANCIAL ADVANTAGE

Yet even if these figures leave many with their mouths open Aisher maintains he got good value for his money. "There was a definite financial advantage building *Yeoman XXX* in South Africa over building her in England. That there certainly was. Against Australia and New Zealand there was not a lot of advantage, believe it or not. But one of the reasons we built her here, and we could have built her in New Zealand or Australia, was that the latter are difficult to get to. Coming to South Africa from England you don't have the time lag, the flight's shorter and it is very pleasant here."

There is always the tendency to gee-whiz at the cost, forgetting the man-hours and technical talent required to build a boat of *Yeoman*'s sophistication, so let's look at what the maxi actually represents.

COUNTING THE INPUT

Plans were received by the builders, Eric Bongers Boatbuilder, in October 1989. According to Simon Bongers, who had a hands-on involvement from the beginning, work began immediately with the construction of the plug. "There were two or three guys working full time on the plug from October '89. Then in March last year twelve men were brought onto the job of building the hull proper and in November of 1991 Bobby (Bongers) joined us as systems buyer and consultant."

Yeoman XXX was launched just over a year later. In addition to the core team many small but important jobs were subcontracted. For instance Robert Gradl was responsible for the installation of the electrics. Salie Jacobs did most of the customized stainless steel work. Harry Anders made the sixteen 45 mm keelbolts and their nuts (R150 each). Fry's Metal cast the 9,2 ton keel. Sacos thermo-moulded the eight 10 mm acrylic wrap-around windows (R1 500 each). Brian Stevens of B Canvas designed and sewed all canvass accessories like hatch hoods and pipe-cots.

MATERIAL CHOICES

Robin Aisher's specific demands of the boat dictated the exact choice of hull material. "*Yeoman* was built to race and for whichever regatta I entered I wanted to rate. She's consequently very much an IOR hull, but not built in exotic material so that we could rate under IMS."

What the designer Bruce Farr told *SA Yachting* underlines the owner's brief. "Robin Aisher began discussions with us in early 1989 regarding a new racer/cruiser which is now realized as *Yeoman XXX*. Aisher had in mind a fast light-displacement yacht capable of worldwide IMS racing and cruising.

BRUCE FARR COMMENTS

"Ultimately he purchased Farr design 175. The plans were originally developed in 1988 for Vittorio Moretti of Italy for round-the-buoys IOR racing. At 72 foot (22 metres) we refer to her as a mini-maxi.

"Our subsequent modifications to this design included a new fractionally rigged, swept spreader sail plan instead of the original masthead version and a new bulb keel. From here Andrew Winch Designs was responsible for revising the deck geometry," Farr said.

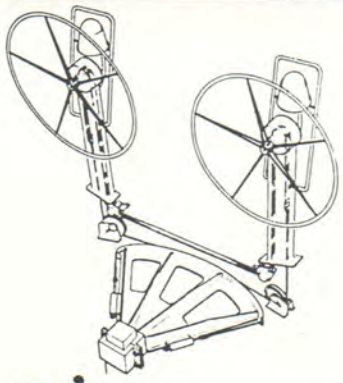
To comply with the ban on exotic materials under the IMS rules Eric Bongers built the hull using British Industrial Plastic's vinylester resin bonding to a core of cross-linked Termanto foam sandwich supplied by Duroplastic Technologies.

Bongers said, "We settled for the vinylester

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The system provides the smoothest and lightest transmission of mechanical effort yet devised. Illustrated is a typical installation where the smooth running and lightweight characteristics of the geared belt system shows its advantages. The tandem wheels are cross connected via a long Kevlar reinforced belt running over twin alloy gear pulleys and twin idlers. The system then uses conventional cable and sheave arrangement to drive on to a light weight fabricated alloy quadrant.



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Yeoman

30 resin because it is a step up from polyester, plus it gives a little more flexibility. I have worked a lot with Airex and I like it. There is an Airex rigid foam, but not in the thickness we required and I was not prepared to accept gluing two pieces together for the thickness we wanted, so we went with the Termanto core."

KEEL TESTING

The 9,2 ton keel which is 2,9 metres deep bolts onto a metal H-frame inside the boat. A further four tons of lead ballast (16 x 250 kg blocks) is fixed amidships inside the vessel. While the designer is not forthcoming with specific figures, Simon Bongers reckons *Yeoman XXX* tips the scale at just over 20 tons.

Eric Bongers said that given his experience building *Atlantic Privateer* he felt open to strengthen Farr's keel design detail. The original drawing called for 16 keelbolts all terminating with 100 mm plates at the end of the bolts which went 600 mm into the keel. He staggered the bolt endings so that some now go 1,2 metres down into the keel. He also strengthened the box girder fixture inside the boat.

The keel was subject to full tank testing to get best upwind performance for triangle courses in the Solent and cross channel racing. The tests were conducted jointly with those done for *Yeoman*'s stablemate *Longobarda*.

SAIL INVENTORY

Yeoman's inventory includes 14 sails all designed and built by North. In fact her mainsail is the largest Kevlar mainsail built in Cape Town. Geoff Meek said, "It is larger than *Atlantic Privateer*'s main and that was the biggest Kevlar main we have made." The sail weighs 102,735 kg and because of its size requires four men to move it. The Dacron delivery mainsail is twice the weight.

North's Andy Mitchell said, "On a sail of this size the stretch in the Dacron is fairly substantial. The superior set of the Kevlar main will be noticeable and over time will be substantial."

The Kevlar main has a 96 per cent Kevlar content which is very high. Most high-tech mains are 50% Kevlar and 50% Mylar. The cloth is a North product called Gatorback which was developed to address transverse loads in the Kevlar cloth. Gatorback has Kevlar yarns running 12 degrees to the fill which improves the life of the sail.

A CLOTH PATCH

Panel layout also improves the set and lifespan of the sail. The reef patch mentioned earlier is the size of a Sprog main and includes 30 orientated panels.

Geoff Meek points out that, "One could obviously decide to make the sail with less panels to save cloth, but it would not be the best for the job. With seams and off-cuts there is a 30 per cent wastage. For instance, given a sail area of say 100 square metres we would be using 130 square metres of cloth at between R150 and R200 per metre."

Andy Mitchell adds, "This is because of the high number of panels and the seams which account for not wastage as such, but overlap. Yeoman's number one for instance has 85 panels, the spinnaker has 190 panels and the main 70. There is a lot of work nesting the panels and getting the best use out of the cloth given the panel design requirements."

HEAVY LOADS

Viewing the sails one is impressed with how enormously rugged they look. The mainsail clew on *Yeoman* has to withstand loadings of between 3 500 and 4 500 kg. For the same reason specially milled titanium rings, without welds, are used in the heads of genoas and as clew rings, including the clews of two spinnakers.

An interesting detail on *Yeoman* is the mainsail halliard lock necessitating a special car which runs the sail up either side of the luff groove. In order to accommodate the trip-line the mainsail has a special cloth tube running to the head of the sail just aft of the luff.

MECHANICAL MUSCLE

Managing the forces involved needs muscle. This comes in the form of two Lewmar pedestals driving two Lewmar 700 wide-bodied primaries. The mainsheet is looked after by a wide bodied 900 while the halliards and runners are served by the 35 light but powerful 650 self tailers. The

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Yeoman

traveller is controlled by 2 X Lewmar 460's. Rob Sharp of Central Boating said that all these winches are fitted with Lewmar's servo self-tailing device which are self adjusting, allowing positive clamping of the sheet.

The Lewmar Frederiksen ball traveller system allows for smooth adjustment under high load and this equipment has been choosen for genoa, mainsheet and spinnaker control.

ELECTRONICS

Yeoman boasts state-of-the art electronics. The B & G 690 system number crunches and the data is shown on the digital 20/20 displays and the FFD's (full function displays). The navigation area features an Icom M800 SSB, Furuno 1720 radar, 208A Weather Fax and GP 500 GPS receiver.

Power is supplied by means of a 18 hp Yanmar diesel driving a 220 and 12 volt generators which are engaged by means of electric clutch. Voltage is stored in a bank of six Oldham batteries. The Yanmar also drives a Sea-fresh watermaker and refrigeration unit. Main engine is a 130 HP Volvo Penta diesel providing drive through a two-bladed 600 mm Max-Prop.

STEERING

Yeoman features a customized version of the Whitlock twin pedestal 635 radial quadrant 200 Series HTD. Normally the system would have had gears but the owner wanted belt drives which he maintains gives a smoother helm. The 1016 mm (40 inch) Fastnet wheels give two and a half turns lock to lock. According to John Colclough of Power Marine the angles of the pedestals were also customized for *Yeoman*. Finish is powder-coated polyester resin on etched aluminium which is then oven-baked.

RIGGING

The spar for *Yeoman* is a fractional rig with triple articulated tubular spreaders and was built by Bellamy Masts to Bruce Farr specifications using technology gleaned from Sparcraft Lymington. Nigel Clack of Bellamy masts said, "The mast is designed and built with variable inertias on each panel. To the layman this means that the bottom panel up to the first spreader is capable of taking more compression than the second panel. This is progressive to the masthead. In addition to that the mast sports a radical Concord taper at the hounds tapering off to the head."

To keep compression to a minimum, particularly in the tapered top section, a main halliard locking headboard is used. Once the sail is up the headboard locks in position and the halliard tension is released, relieving the section of unnecessary loads.

The massive boom, which is only slightly shorter than a Miura mast, is built to the maximum depth allowed from Rondal profiles and sports a huge outhaul carriage to take the load of the loose-footed main. The sail flattener line operates inside the boom from a Navtec hydraulic cylinder with reverse cascade tackle. The boom vang is also Navtec hydraulics operating from a System Six central switch manifold.

All rigging is rod by Navtec complete with neat tip-cup spreader end terminals. The forestay sports a Diverse Yacht Systems load cell built into the toggle of the rigging screw. The forestay loads are communicated back to the cockpit repeaters which are within easy view of the crew tensioning the runners.

Running rigging is a mixture of conventional braid, Spectra and Kevlar line, all manufactured by Gleistein. The headstay furler is made by Reckmann of Germany and has a removable drum for racing. The spinnaker pole is carbon fibre complete with Intrepid end fittings.

Clack said the mast was ready for *Yeoman*'s ocean crossing after only three tune-up sails but that Bellamy Masts had had to make two structural changes to the original design specifications. "The top spreaders were lengthened and the jumper angles were raked further aft. Both these modifications were to increase shroud angles and hence offer more top mast support," he said.

INTO THE BLUE

Yeoman XXX departed Cape Town in mid-March on her maiden voyage. Her destination was the Caribbean and her first regatta — Antigua Week.

