

Race. We'd also become the first monohull ever to sail 500 miles in a day. By noon the distance had grown to 517; at 1600 we were up to 520. When at last the fog released us from its featureless embrace, we had sailed a whopping 525.7 miles in 24 hours, adding 50 miles to the existing record.

A day later, in the dark of night, I came on watch to find the Code 3 masthead gennaker up in 30 knots of breeze with the boatspeed steadily hovering around 27. Throughout the watch, six guys were permanently glued to the pedestals pumping the sheet right up until the lock strop failed and the kite came tumbling down, trawling in the water and tearing in the process. Once again the entire crew was required. With no small amount of effort, we hauled the monster back on deck. Less than 20 minutes after the strop failed, we had the Code 8 up and 20 knots on the speedo.

By the end of the fifth day we began to see more and more guys up long before their watch began and lingering after it ended. Sleep was no longer a priority. This wonderful express train across the Atlantic was rapidly approaching its destination and each of us wanted to savor it.

After jibing away from the famous Fastnet Rock, we discovered a leak in the keel ram. Unable to cant the keel, we decided to pump in some ballast (usually only done while going upwind) to stabilize the boat. It was at this point that we realized the ballast pump motors weren't working either. But we managed to force nearly 7 tons of water into both the fore and aft tanks, stabilizing the boat enough to continue running at 18 knots.

We jibed five or six times during the final 24 hours as the breeze tapered off and kept squaring until at last, through the haze, we saw the Lizard. On our approach, two RAF jets did three low-altitude flybys, pilots waving as they banked their jets for a better look. It was a stunning reception.

With slightly more fanfare than our departure, our arrival in Cornwall, England, marked the end of a wonderful journey. Most of the crew admitted it was the driest and most effortless offshore race they'd done. We were pushing hard, but it was *Mari-Cha* that seemed to do most of the work. ♦

# EVOLUTIONARY not revolutionary

BY TONY BESSINGER

**A**t first glance, *Mari-Cha IV* looks like the straightforward, brute-force effort to break sailing records that it is. Its dimensions—140 feet from stem to stern, 31'6" in beam, 21'6" in draft—certainly suggest that, as does the extravagant outward flare of hull from waterline to deck, designed to get water ballast and chainplates as far outboard as possible. But no, this Gallic creation is more foil than saber or épée; a boat designed to finesse its way across the earth's oceans at a furious pace.

As this article was written, Bob Miller's *Mari-Cha IV* was storming across the Atlantic, breaking the 24-hour and transatlantic records (see previous story). While the newly hatched 140-footer was in Newport, R.I., being prepped for its transatlantic, *Sailing World* was given access to the boat. What we learned and photographed was eye opening to say the least.

The Southern Spars-built masts are the first hint: there are two of them, each 147 feet tall and each rigged with four swept spreaders. The forward (main) mast, however, has a visibly larger chord than the mizzen because the mizzen will always be reefed before the main.

The masts are by no means the tallest ever built, so there's plenty of existing equipment to support them. In fact, although much of the gear is titanium, very little of *M-C IV*'s hardware or deck gear is custom; winches and deck hardware by Harken, roller-furlers from Facnor, blocks from Antal; all off-the-shelf, relatively easy to get parts for, and familiar to the crew. The halyards look like something you'd see on a 50-footer, diameter-wise, the happy result of using halyard locks. Luff tension is created with hydraulics at the tack. Loops made of spliced Dyneema SK75, and lashings of Spectra replace shackles in almost every instance. They're lighter, stronger, easier to spot

**MARI-CHA IV'S** nav station boasts two carbon-fiber auto-racing seats and a full suite of electronics.







wear on, and in the case of lashings, infinitely adjustable. The shrouds, however, are rod, showing that composite shrouds aren't trusted for this level of load yet.

Both booms sport lazyjacks, and the mizzen boom has triangular wings, or tiedowns, on either side of the boom to support reefed or flaked sails. The main boom has none because the gennakers —

reaching sails tacked on the bowsprit — are doused by the letterbox method — the sail is pulled under the loose foot of the main and gathered. The mizzenmast is raked aft 1 degree more than the mainmast, which allows the main to be open and twisted when the mizzen is sheeted tight, opening the slot. The large span between the two rigs allows for a powerful

**THE SEPARATION BETWEEN** the main and mizzen masts allows for a large reaching staysail. Below: Dyneema loops, one of the titanium steering wheels, and lashings on a running backstay block.

reaching staysail that adds a few knots on most points of sail wider than 60 degrees true. The sails were built by North New Zealand out of carbon 3DL panels. The







**THE BOW SEEMS VERY FAR** away in this shot taken from the transom. Below, the forward cockpit and the lone companionway.



crew says the boat powers up quickly, and that the mizzen, with its slightly shorter boom, is the first sail to be reefed. On the way from Bermuda to Newport in September, *Mari-Cha* had two reefs in the main, two in the mizzen, and a tiny Code 4 headsail in 25 knots of breeze. Boat-speed was 28 knots.

On deck, input from the team's many ocean-racing veterans shows. Large, flush-mounted, threaded sockets are everywhere so that the crew can put padeyes, blocks, and tiedowns where needed—useful on a boat with so many various sail configurations. Twelve

Harken grinding pedestals sprout all over the shallow cockpits, with gearing underdeck that allows as many as five of them to be linked together. The boat is also equipped with small Harken hydraulic power packs that attach to some winches for delivery crew to use. The twin titanium steering wheels are far forward, between the two rigs, and the trimmers—as many as five to a side—sit dozens of feet apart. Some members of the crew are equipped with small two-way radios for communication, a must when communicating with someone as far as 140 feet away. Perhaps because

there's so much of it, the deck looks clean and uncluttered, the cabintop is a mere blister. In one of the main access hatches are the rope controls for the water ballast and digital readouts, a system that takes up to 10 minutes to fill the two tanks (per side) and their total of 2,228 gallons (18,581 lbs., or 92 crewmembers worth of weight) of water, but makes up for its pace by being reliable. The simplest, and coolest readout is the keel-cant indicator, a stern-on view that we'd love to see in play. The keel cants as far as 40 degrees, but *Mari-Cha IV* isn't designed to sail with 100-percent keel cant coupled with 100-percent water ballast, and the crew is still figuring out which setups are fastest.

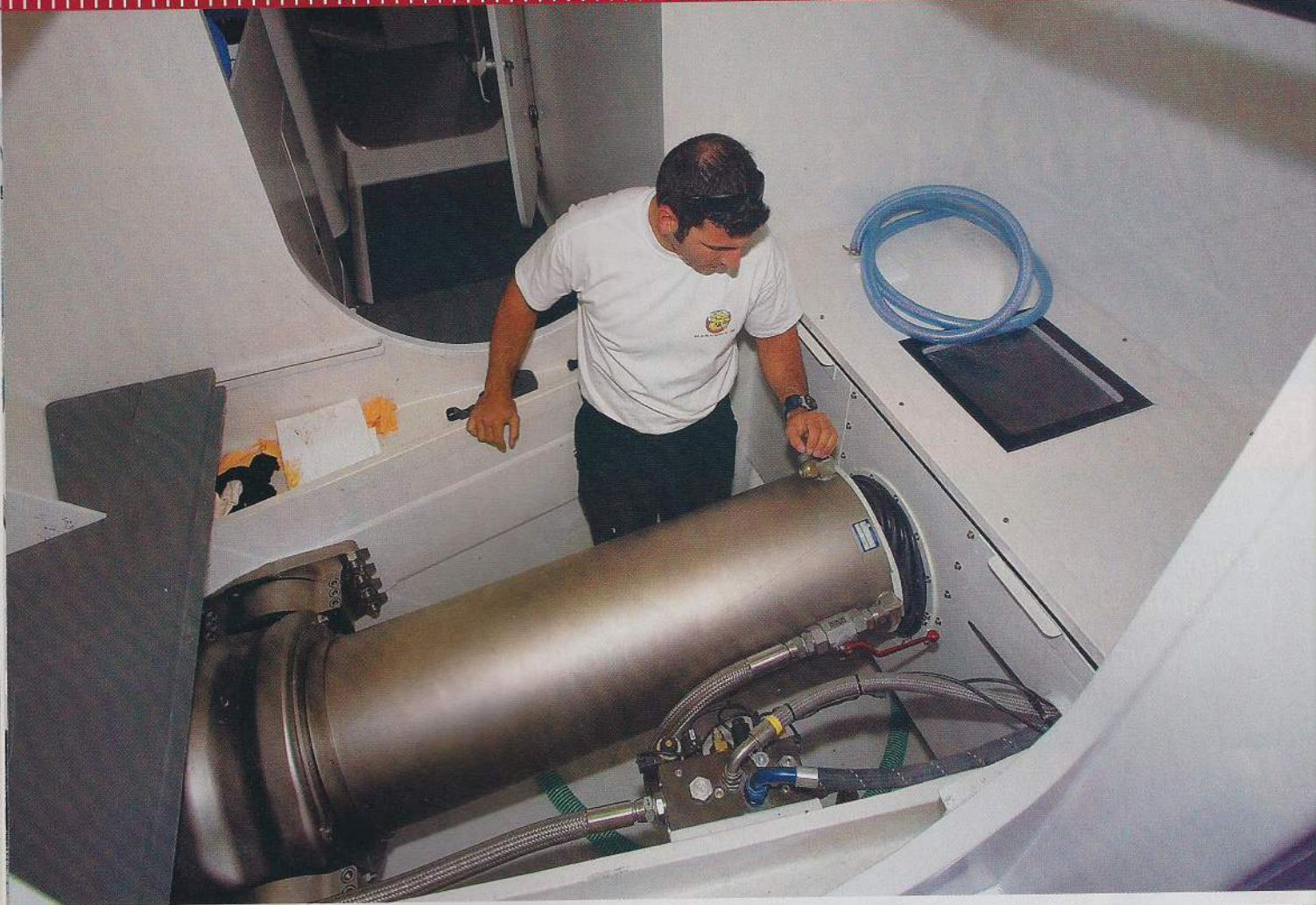
Down below, in a lazarette aft of the mizzen and forward of the communications dome is the steering quadrant, a massive sculpture of titanium and carbon fiber that we weren't allowed to photograph but gazed at in awe. Forward on the starboard side is the electrically powered ram that cants the keel and 20,000-pound bulb. Nearly 6 feet in length, the Cariboni cylinder is one of the few custom pieces of equipment on the boat and is powered by either the generator or the main engine, a small but high-revving Yanmar.

The accommodations are spartan, with pipeberths tucked away wherever there's room, mostly amidships. Everything movable below is designed to be stacked. The galley is amidships and up high on the hull, and consists of a couple of burners, a stack of dogbowls and mugs, and a small shelf of spices and sugar.

Walking below is like being on a warship; there are high sills for the watertight doors, and hydraulic piping overhead. Thanks to the carbon-fiber and Nomex construction and a total lack of sound insulation, the noise below is described as amazingly loud when the boat is powered up. The hull distortion at speed is noticeable, despite two longitudinal strengtheners—what the boat was designed and built around—that run the length of the hull and provide the stiffness that such a large carbon structure needs.

Each crewmember is assigned a set of gear that includes a full set of Musto HPX foul weather gear, thermals, and a small pouch containing a flashlight, strobe, knife, and personal Mini-B EPIRB. On a boat with a speed potential of 40 knots, a





**STEFAN FODOR SHOWS** off the keel ram. The mizzen mast (right) is surrounded by winches; you can use the Harken grinder pedestal for relative scale.

man-overboard situation is a serious affair; anyone found not wearing their personal EPIRB at night is fined \$10, which goes into a crew refreshment fund. For those wondering, Miller's cabin is tiny, bereft of amenities, and contains nothing frivolous save for two small hydraulic rams that tilt his bunk. His personal gear bag is smaller than what most sailors bring on board for a day race.

Finally, the brains of the boat, the small but comfortable nav station, is set under the blister cabin top. The red desk is equipped with the latest in flat screen monitors, loaded with software and hardware—Standard M, Mini M, VHF, two networked computers, GPS plotter, depth sounder, barometer and radar—and has two carbon-fiber racecar-style seats that move fore and aft on short tracks. In addition to the B&G Hercules 2000 system, *Mari-Cha IV* uses MaxSea navigation and routing software.

Plans for *M-C IV* include Antigua Sailing Week, the Pacific Cup, and eventually a Jules Verne record attempt. ♦

