



MARAROA TOO QUICK FOR A ZZZZ

BY LINDSAY WRIGHT

Sitting beside the wharf at Q-West's Wanganui boatyard, Meridian Energy's newly launched crew boat, *Mararoa*, seems like a hell of a lot of boat to be doing a ferry run back and forth across a lake.

But Manapouri is not your average southern lake – at up to 444m deep it's New Zealand's second deepest lake. It trends 29 kms in an east/west direction, right into the prevailing winds of the Roaring Forties which are funnelled through it by the mountains and high country that flank either side of the lake.

Mararoa will be tasked with travelling three times daily from Manapouri township 18nm (33km) to Meridian Energy's West Arm Power Station with power station staff and contractors on board and will replace two 1960s vintage displacement vessels, *Endeavour* and *Resolution*, on the run.

"Apparently they call them the zzzz boats," Q-West general manager, Colin Mitchell, laughed, "because they put everybody to sleep."

There won't be as much time for napping on *Mararoa* though, the 19m catamaran has a top speed of 27 knots and a service speed of 25. "She also creates a lot less wake than the older boats which will reduce her impact on the environment," he added, "and is a hell of a lot more fuel efficient."

The design brief was for *Mararoa* to achieve 25 knots at 80 percent engine power – which she fulfils completely.

During early talks about the catamaran, Meridian Energy technical representative, Jim Young, suggested using Incat Crowther from Newport, NSW to design the boat. Incat are better known for the big, high speed wave piercing catamaran ferries built in Tasmania, like the *Lynx* which ran across Cook Strait for the Interisland Line. Lock Crowther was a legendary multihull yacht designer.

"We enjoyed working with a significant international design company like that," said Colin. "They sent a project manager out to check on various phases of construction and were very pleased with the build quality."

Mararoa will be operated and maintained by the Fiordland transport and tourism operator, Real Journeys Ltd, which operates a fleet of boats in the area and had some technical input in *Mararoa*'s planning and construction phases.

Mararoa was built by Meridian, leveraging the syndicated procurement provision of the NZ Police Marine Vessel agreement with Q-West. This not only significantly reduced the procurement costs for the vessel, it also provided New Zealand businesses with the opportunity to successfully participate in the

The mast gives a clue to some fancy kit on board



The helm electronics panel

delivery of a major project for Meridian.

Build time for the \$2.7 million boat was 11 months from laying the keels to the fully fitted out ferry.

Named after one of the major rivers feeding into Lake Manapouri, the energy company's people mover was designed and built to Lloyds G3 standard which means she is covered to operate up to 200nm from the nearest safe haven.

The bottom plating is 8mm thick 5083 marine grade alloy with rounded bottom sections, perhaps to promote a softer ride in the steep waves of Lake Manapouri. Hull plating is 5mm thick then 4mm for topsides, decks and superstructure all backed up by bulb bar alloy stringers intermittently welded on 200mm centres.

One deviation to normal Q-West construction methods, was the introduction of extruded aluminium planking for the tunnel areas of the boat, an innovation suggested by the designers. "Instead of building say, a deck, out of normal plate, we laid the extruded planking and then welded the individual planks together," Colin explained. "It's more labour intensive but, over a given area, works out to be stronger. The parallel lines of welding on deck do need a double take for people accustomed to straight plate surfaces."

Each of the hulls has a prominent welded section spray rail on either side which does a good job of peeling wash and spray ►



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Mararoa heads out on sea trials



The main saloon with comfy seating

Each of the hulls has a collision bulkhead forward, a void space aft of that and then a 1500 litre fuel tank forward of the engine rooms.

The horsepower to get the 35 tonne catamaran under way is supplied by two MTU Series 60 14 litre, in-line, six cylinder power plants which develop 600hp at 2100rpm. The power gets to the water via twin MGX5114 twin disc 2.04:1 reduction gearboxes which turn 32" x 37.2" four bladed Henleys Tiger propellers. Shaft bearings are by Thordon – the turbines at Meridian's West Arm power station also spin on Thordon bearings.

Isoflex couplings transfer the grunt to three inch 205 stainless steel shafts running through Easiflow stern tubes and A brackets. Total draught is 1.2m.

Running gear, Kiwi Seals, Easiflow rudder stock glands and stainless steel rudder assemblies were all provided by Henleys Propellers and Marine.

Keeping the horsepower under control is also handled by Twin Disc equipment – EC (electronic control) 300 units transfer the skipper's orders from the wheelhouse to the engine room.

One advantage of operating on a lake is that there are no

away from the boat, even punching into a steep swell across the Wanganui bar. Nuggety welded section belting also stretches about three quarters of *Mararoa's* hull to handle any ham-fisted docking manoeuvres.

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An example of the bits

corrosion worries, but to remain environmentally friendly, *Mararoa's* engines are traditionally water cooled by pumping fresh water from the lake through the engines' heat exchangers and out again.

The most prominent components in *Mararoa's* engine rooms are the two massive cowl mufflers, wrapped in silver insulation and suspended from the deck head aft. "They're a dry exhaust," Colin explained, "with water injected in at the transom – she has to be really quiet to comply with noise restrictions on Lake Manapouri."



Main capstan and cable

Access to the engine rooms is via aluminium ladders located in noise and heat insulated lockers at the for'ard end of the huge outside decks aft of the house. Once down in the engine rooms all the regular maintenance points; oil filter and fuel filters, Racor fuel filters, oil dipstick, gear box and drive belts fall readily to hand. The engine spaces are well lit but it's also a simple matter to open the hatches above the engines which would also make for ease of engine removal. The noise suppression priority goes further than just the exhausts – the engine rooms are heavily insulated to afford the quietest possible commute for power station staff.

Further aft, double action hydraulic rams steer the twin foil rudders. The TMQ system is all electronically interfaced so that there's no need for mechanical linkages.

What must be the smallest generator in the Meridian stable is mounted aft of the starboard engine in its own sound shield engine box. The Caterpillar C2-2 genset from Gough Cat pumps out 22.5KVA to power *Mararoa's* domestic, drive and navigation systems.

And let's not forget the electrical systems. Enertec supplied Mastervolt's new Masterbus system which provides complete power management for all Mastervolt devices connected to the network. The MasterBus system reduces complexity of the electrical system with the benefit of reducing material cost and installation time while providing a level of system monitoring and control not available from any other manufacturer.

Two Mastervolt Mass GI high frequency isolation transformers provide isolation and safety for the AC shore supply, while a Mastervolt Mass Combi 24/4000-120 provides AC power for equipment when external AC is not available and 120 amps of battery charging when external AC is available.

Two Mastervolt MasterShunts provide complete battery information including capacity and historical information of the battery banks with heavy DC loads all connected through ▶

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Mararoa lifts to the entering swell on the Wanganui river entrance



three of Mastervolt's new DC Distribution modules. The DC Distribution modules offer monitored fuse protection for large DC consumers with alarms activated if a fuse fails.

A MAC 24/12 converter charger then provides a three stage charge to the 12V radio battery from the 24V house battery bank system. All this equipment is connected to the MasterBus network and displayed on the EasyView touch screen display providing clear, real time information and easy control of individual products.

The comfort continues above decks to *Mararoa's* spacious passenger area. The boat's 6.9m beam becomes most obvious here, the area is spacious and airy, flooded by natural light through large windows. Lake Manapouri is often billed as New Zealand's loveliest lake and the big areas of lightly tinted reinforced glass in *Mararoa's* deckhouse provide ample outlook to appreciate it. She is surveyed for 46 passengers seated in a mixture of fixed back and reclining blue vinyl upholstered seats. Two big LCD screens have the option to display the radar display, GPS plotter, DVD or a laptop Power Point display. "She can double as a floating lecture theatre or seminar room, if need be," said Colin. Dark blue synthetic carpet rounds off the integrated décor and tables are provided for those energy workers who want to snack or work through their commute.

Bluff's Marine & Aviation Safety Equipment supplied a full range of safety equipment, including two Viking 25 man life rafts and a Salcom 406 EPIRB.

Contributing to the feeling of airiness are the Ayres composite panels which line the area. The panels use an aluminium honeycomb core for lightness and rigidity, with a paint finish bonded to the outside. "It's ultra light, strong, easy to maintain and can be easily bent to take a radius," Colin explained. A ceiling damper system in the deckhead helps reduce drumming and outside noise. The deck is laid with dark blue synthetic carpet which adds to the integrated colour scheme and general comfortable feel.

Marine Air Vector Turbo reverse cycle air conditioning, supplied by Whiting Power Systems, keeps the passengers comfy in the sweltering southern summers or the chill south westerlies of winter. Another, dedicated Marine Air unit keeps the wheelhouse cosy.

A head is provided on deck behind the superstructure and would be accessible, without getting wet, even punching into a steep chop at speed.

Two steps up from the for'ard end of the deck saloon give access to the wheelhouse. Here a full array of Koden electronics face the skipper and mate. Steering is by joystick control. Twin

hydraulically dampened helm seats offer a good view over the wide foredeck and two either side but peripheral vision is a bit restricted by the wheelhouse sides when looking astern. Engine controls are at hand from the port seat.

A Maxwell windlass is fitted to handle the ground tackle and a 20kg Manson plough anchor is tidily mounted in a special fitting to starboard.

Environmental considerations were paramount in *Mararoa's* conception and construction. International Paints Intersleek fluoropolymer foul-release antifouling coating for vessels operating above 10 knots is an essential part of that priority because the low friction, super slippery coating prevents marine growth from taking hold, without using biocides. The absence of biocides reduces costs during dry docking or hull cleaning, as the cost of disposing wash water should be minimal.

In choosing the electronics package for *Mararoa*, Meridian and Q-West were mindful of the fact that the vessel would be operating in a remote location and that the equipment solution offered must be robust, extremely reliable and easy to operate with, where possible, full system backup.

The task was given to Cetronics Systems Ltd who were selected by Meridian and Q-West as the primary equipment supplier and has developed an excellent reputation for supplying integrated solutions to commercial vessels and larger leisure vessels, using equipment from international and local suppliers. *Mararoa* has two Koden radars; an MDC 1840BB 48nm, 4kW, 3ft open scanner black box radar with a 17" colour display as the primary radar and an MDC 1041, 10.4" colour LCD, 36nm, 4kW 2ft Radome Radar as the secondary radar. The MDC 1041 Radar also has a split screen dual PPI mode enabling two radar images on different ranges to be displayed on the one screen. This allows both close in and long range targets to be displayed at the same time with outstanding target definition and clarity.

The navigation package includes a computer based plotting package displayed in the wheelhouse on a second 17" colour display. The GPS input for the computer based plotter was provided by a Koden KGP 913 GPS. This unit has its own LCD display thus providing backup for the computer system in the unlikely event of computer failure. The final element to the navigation system is the Koden CVS 833 1kW dual frequency echo sounder providing a clear graphical and numerical indication of the depth under the keel.

For communications the *Mararoa* is fitted with a Standard Horizon VHF and Moonraker Antenna system with cellphone communications being provided by an OceanCell system with a Moonraker CEL800 antenna system providing extended ►



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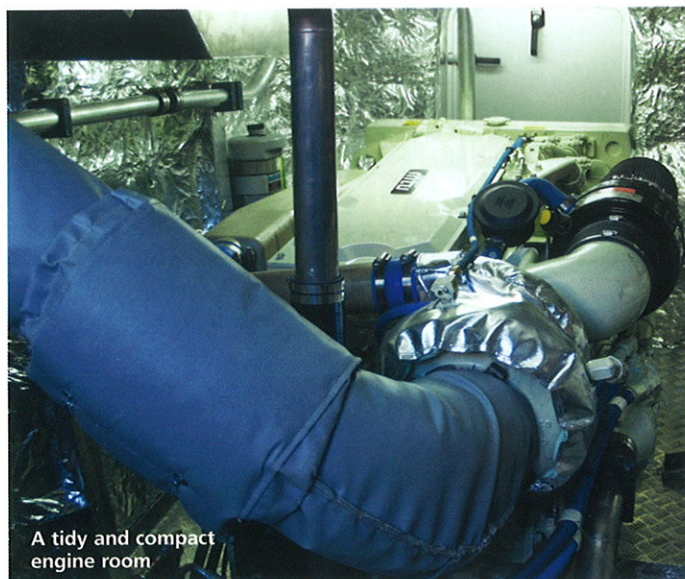
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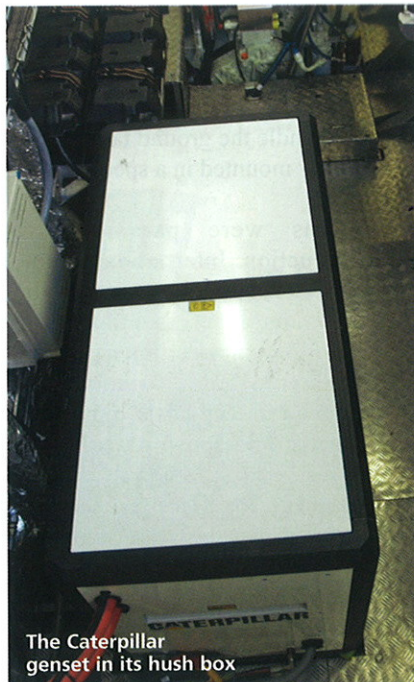


A tidy and compact engine room

cellphone coverage essential for a vessel that will be operating in the remote Fiordland lakes.

There is a closed circuit TV monitor mounted on the bridge providing the skipper with up to the minute information from cameras mounted in the engine room and on the aft deck. The helm is also fitted with a noise cancelling microphone to enable the vessel skipper to make announcements over the PA systems both outside and inside the vessel. This allows important safety announcements as well as clear communication with the passengers and crew.

When it came to the entertainment system Meridian wished



The Caterpillar genset in its hush box


to ensure that the vessel could not only be used to entertain the passengers during their voyage, but also keep them up to date on the vessels position and display the navigation equipment in the main cabin. In addition to this, it was important that the system supplied be flexible enough to allow the main cabin to be used for meetings and conferences with a fully integrated computer connection station and a wireless microphone system.

This system, provided by

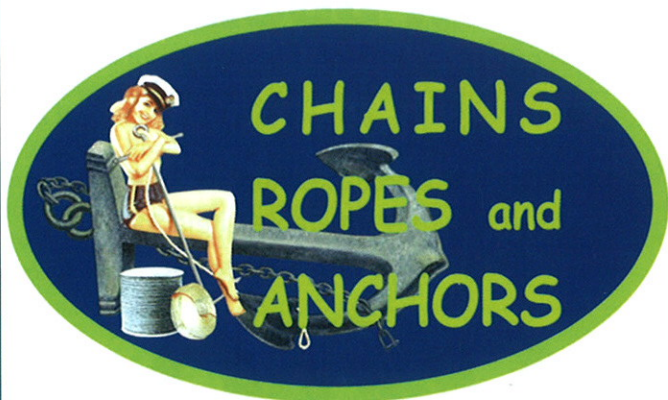
Cetronics, met and exceeded Meridian's expectations with video feeds being processed and switched using Kramer signal processing equipment. This enabled video from a DVD player, a presenter's computer, the main plotting computer and the primary radar all to be displayed on one 40" LCD screen and two further 20" LCD screens in the main cabin. The audio system is based around Australian Monitor amplifiers and mixers with special attention to feedback elimination when using the wireless microphone system. The audio is fed from the DVD player, CD player, AM/FM radio and wireless microphone throughout the main cabin and deck areas with the ability to control the volumes and audio content to different zones within the main cabin and on deck giving ultimate control over audio content and volume.

After sea trialling, *Mararoa* left Wanganui bound for Bluff on April 23. The next day she bunkered in Lyttelton and the day after that, took on fuel at Port Chalmers. From Bluff she was trucked overland to the challenging lake that will be her workplace.

Meanwhile, it's business as usual at Q-West. Work is underway on the first of five new 17.9m whale watch vessels for the same Kaikoura owner over the next seven years as part of their vessel replacement programme. A 13.9m research vessel is also under construction for NIWA and due to be launched later this year.

So much is happening for this longstanding Wanganui boat building company. 

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SPECIFICATIONS

Name	Mararoa
Type	19m crew transfer craft
LOA	19m
Beam	6.2m
Draft	2.15m
Engines	2 x MTU Series 60 rated at 600bhp
Propulsion	Blade, fixed pitch
Fuel capacity	2 x 1500 litres
Service speed	25 knots
Construction	Marine grade aluminium
Designer	Incat Crowther Australia
Builder	Q-West Boat Builders Ltd
Owners	Meridian Energy Ltd