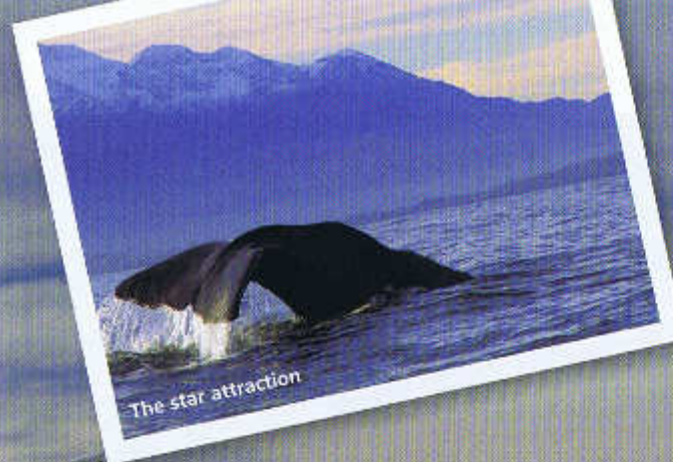
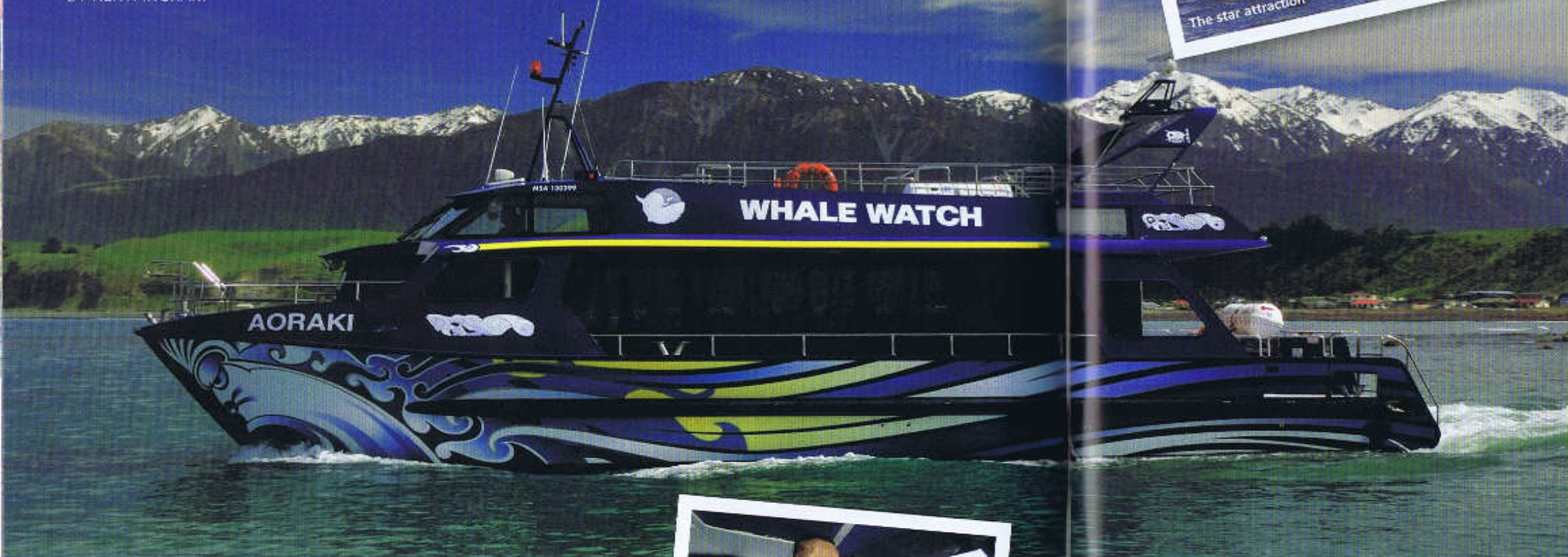
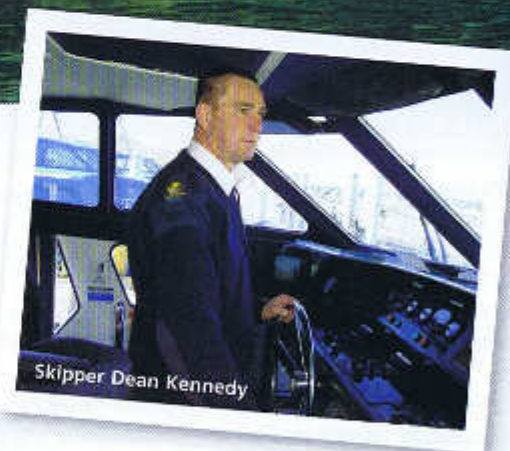


AORAKI REPOWER – PRACTICAL OPTION

BY KEITH INGRAM



Kaikoura is the homeland of crayfish, and widely recognised as one of New Zealand's leading eco-tourism destinations, offering exciting tours and activities.



While it could be said that you can't leave Kaikoura until you have had a feed of koura (crayfish or New Zealand red rock lobster) the same could be said about whale watching.

The marine life in this part of the coast is unique, with the haul out and breeding areas for the New Zealand fur seal easily accessible along the coast. Both the dusky and the rare Hector's dolphin reside locally and the Kaikoura Canyon is home to the giant sperm whale all year round.

This magnificent beast is the largest of the toothed whales and the world's largest predator, equivalent in size to four elephants. The whales may dive up to three kilometres deep and stay submerged for over two hours while hunting prey such as the giant squid, ling and groper. Kaikoura is one of the few places in the world where sperm whales can be seen in every season – and near to shore. The deep Kaikoura trench comes in close, and 800m from the coastal highway at Goose Bay the water depth

drops to over a 1,000m deep.

The whales congregate here because of the 1.8 mile deep Kaikoura Canyon that runs right up against the coast, creating a rare system of sea currents that sustain an incredibly rich marine food chain. The sperm whales, predominantly mature and juvenile males are at the top of this food chain, and the abundance of fish ensures they make the waters of Kaikoura their home.

However, Kaikoura's association with whales was not always friendly. The European settlement of Kaikoura was established in 1842 by Scotsman Robert Fyfe after he built a whaling station on the shores of Kaikoura. Many local Maori were employed as crew and workers, but sadly the target southern right whales were already in serious decline and so they hunted the humpback and sperm whales until the early 20th century. Commercial whaling finally ended in New Zealand in 1964.

Today, local Maori retain their close association with these large mammals. Whale Watch is a nature-based tourism

company owned and operated by the indigenous Ngāti Kurī people of Kaikoura, a Maori sub-tribe of the South Island's larger Ngāi Tahu iwi. The company was formed in 1987 at a time when Maori were casualties of Kaikoura's declining economy (around 95 percent of local Maori were unemployed). At this time of difficulty, Ngāti Kurī leaders like the late Bill Solomon believed the local sperm whales held the answer to the unemployment problems of the Maori community. They knew their ancestor Paikea had journeyed to a new life in New Zealand on the back of the whale Tohorā, it seemed appropriate for Paikea's descendants in Kaikoura to once again ride on the back of the whale to a new life. And so it proved to be.

Four families from the Ngāti Kurī founders of Whale Watch mortgaged their houses to secure a loan to start the business (a common misconception is that Whale Watch was founded by funds from Treaty claims, it was not). In the early days, passengers travelled aboard a 6.7m inflatable vessel that carried eight passengers. In time, the inflatable was replaced by a larger boat with an upper viewing deck. Today, the Whale Watch fleet numbers five modern catamarans each specially designed and built for whale watching. Each vessel is 18m in length, about the length of a sperm whale so as not to be seen to be overpowering these magnificent mammals.

This expansion of the Whale Watch fleet required the building of an entirely new marina in South Bay from which all whale watching tours now depart.

The company also saw an opportunity when it secured the lease on the now unmanned Kaikoura railway station, handy ▶

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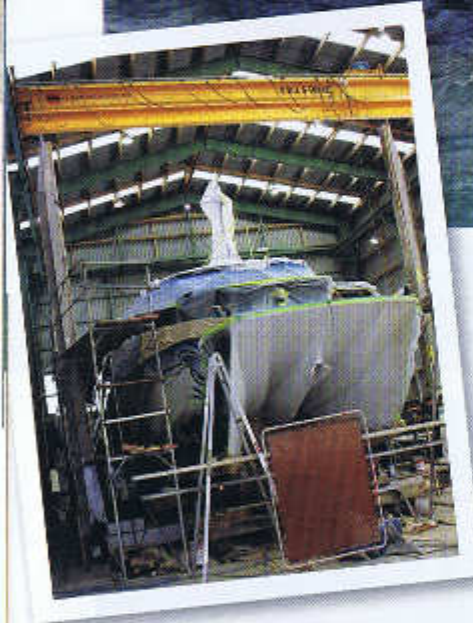
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Aoraki heads out into Kaikoura canyon



LEFT: In the Q-West shed

to the town centre and with ample parking. They converted the building into a reception and a briefing area with a souvenir shop and an excellent café. The building, known as the Whaleway Station, also houses the operation's staff offices, administration

head office and boardroom, and is the main gathering point for all whale watching tours.

Due to the phenomenal success of Whale Watch, the company has stimulated investment in new accommodation, restaurants and an impressive array of cafés and galleries filled with the work of local artists. The company is still owned 56.5 percent by the Tukete Charitable Trust, which represents the original four families, and an added 48 percent investment from Ngāi Tahu Holdings that has enabled the company to capitalise on growth when the economy was peaking.

With the exception of *Wawahia*, the latest new design third generation whale watch vessel that was featured in *Professional Skipper* January/February 2010, *Aoraki* and all the other vessels are second generation – and are all of the same design and specification. The company now has five vessels with one out for service or on standby at all times.

When questioned, maritime operations manager Roger Williams said, "The reason for the 10 year repower/refit on *Aoraki* was to extend the operational life by five years, improve the quality and standard of the vessel, improve fuel/maintenance efficiencies, improve emission standards and reliability – which

included an overhaul of the interior and exterior of the vessel, upgrading and overhaul of other on board systems and repower with the chosen application.

"Our current thinking is to complete a 10 year repower/refit on *Paieka* in 2014, five year repower/refit on *Wawahia* in 2015 and a 10 year repower/refit on *Tohoro* in 2016. Q-West Boat Builders is our preferred contractor for this," Roger explained.

The company is environmentally conscious and because of the need for marine mammal safety is committed to HamiltonJets. Whale Watch embraces new technology to ensure that they can attain improved fuel efficiencies and reduce their carbon footprint.

In the past the boats have been powered with 8V 2000 M70 series MTU marine diesels engines but sadly this motor went out of production and its replacement, the M72 series, would require too much modification to engine bays with a need to raise the deck levels to accommodate them. The cost of this made it not worth considering. A similar problem with engine bay modification was faced when considering the Volvo Penta D16 engine that is currently used in *Wawahia* and alternative option, the Volvo Penta D13, couldn't be supplied with an acceptable engine rating for the type of operation undertaken and performance required.

So when looking at the repower options the company undertook an extensive review of five different quality engine applications (including MTU/Volvo Penta) that might be suitable for the repower of the second generation fleet of vessels. Scania was chosen as the preferred option.

Designed specially for whale watching, these modern catamarans need to be equipped with engines that minimise underwater noise. The new Scania's have fitted in as snug as a bug in a rug, with the only structural modifications being to the engine beds. They matched alignment with the existing water jet units and only minor modifications were needed to marry up the exhaust systems.

"The Scania DI16 070M was a perfect match for a range of reasons, but most importantly the engine size meant that it would fit into the engine bay of the vessel with minimal modification, provided us with the optimum engine rating, could be operated at 100 percent power, 100 percent of the time and we were comfortable with the level of after sales support we would receive from Scania and South Pacific Diesel Systems," Roger said.

They are part of the newest generation of engines released by Scania. The output setting of the engines used by Whale Watch was 552kW / 750Hp @ 1800rpm according to the ICFN Continuous Service Rating – a very conservative rating which is entirely appropriate for their type of operation. With a top engine speed of only 1800rpm, it was expected that these engines would deliver significant benefits to Whale Watch in terms of a long service life, and also in the areas of reduced fuel consumption as well as reduced engine noise and vibration, resulting in a more comfortable experience for their customers.

The water jets were fully overhauled by the Q-West engineers and the new HamiltonJet Type 90 Impellers were fitted to match the new Scania engines. The T90 impellers are the coarsest in the range for the HJ391 water jets fitted and will therefore give the best possible margin over cavitations and consequently the best possible efficiency with the new propulsion system.

Beatty's Driveshaft Centre supplied the cardan shafts connecting the Scania powerplant to the HamiltonJet propulsion units. Fitted with "sealed for life" universal joints and rilson coated sealed spline system, the Turret Marine driveshafts ensure a clean maintenance free operating environment by eliminating the need for regular greasing.

On looking around *Aoraki* we noted how tidy she was given



Cabin seating is designed for comfort and safety

her age, and were advised that while in the Q-West shed *Aoraki* was also given a bit of a birthday to clean up the tired areas that were starting to show as a result of the regular tourist traffic. This included the stripping back and painting of all decks, with new carpets being fitted in the interior. New seat covers were fitted where required – being mainly the isle seats and back rests. New air conditioning ducting was installed and covered as well as replacement air con units. Sadly most modern air con units do not like the salt laden air and as such it is cheaper to replace them.

A new Kohler 13KVA gen-set was installed to cope with the new air conditioning system. This was installed as a replacement with little difficulty. Also fitted are marine toilets that never pollute the sea or the vessel, as these dump into two 200lt black water tanks ready for pump out ashore.

The main passenger cabin is enclosed and outside decks ▶

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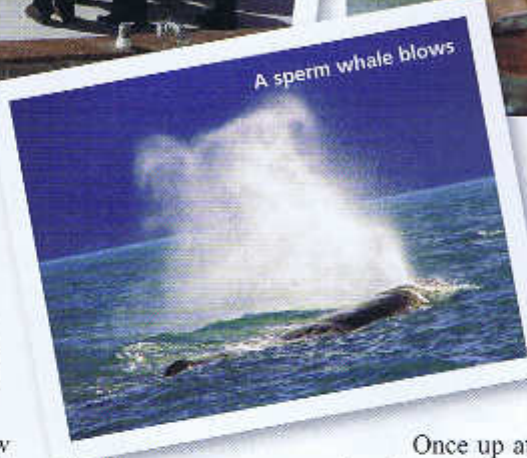
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Tourists boarding at boat harbour



Scania power below



A sperm whale blows

offer great viewing and photo opportunities for passengers. The cabin is spacious and air-conditioned and fitted with comfortable seating that is more than just commuter seating. These vessels head straight out into open coastal waters, for passenger safety all passengers must remain seated while the vessel is underway.

Besides the skipper, the crew consists of a whale spotter to assist the skipper when looking for a "thar she blows" breathing spot from a surfaced whale. Another crewmember carries out the safety briefings and onboard commentary as they operate the computer to the large plasma screens display using the Whale Watch award-winning marine wildlife animations. We were impressed to note that while the briefings are in English, the safety graphics were descriptive and easy to understand. The fourth crewmember acts as a safety number to keep an eye on the passengers at all times, as well as to ensure their comfort.

During sea trials we were invited to join a normal whale watch tour and were able to gain the whole experience offered. *Aoraki* was designated the duty vessel as they were still doing break-in sea trials fuel consumption evaluations while they got some hours on the motors.

We met at the Whaleway Station to enjoy a leisurely lunch of fish and chips before the briefing. Being a tourist town we were pleased to see that the food on offer in the whale café was economically priced and of good quality.

Once in the briefing room we got a preview of the marine life that

we might encounter and the all important safety briefing before boarding the coach for the 10 minute transfer to South Bay. Once gathered on the marina, we were greeted by our crew and given a further safety briefing. This was followed by a further crew introduction as we departed the marina heading for the last location where the whales had been spotted earlier in the day.

Once up at service speed, the distinct Scania growl was heard rumbling beneath. Apart from this confirmation of the power below, there was no discernable vibration as we quickly headed out across the bay. After about 10 minutes, we stopped and shut down so that the skipper could have a listen on his portable hydrophone. Because we are dealing with marine mammals the onboard sounders or fish finders are never turned on in order to protect the mammal's senses.

We moved on, this time at a slower speed, to where the skipper had heard a submerged whale. Five minutes later we spotted a large sperm whale on the surface and approached with care. These whales normally dive for about 45 minutes when feeding in this canyon and will remain on the surface re-oxygenating for about 15 minutes before diving again.

A standard tour is around two and half hours, so to fill in time while the whales were diving, the skipper took us on a cruise to see if we could find the dusky dolphin. Instead we found a small pod of Hector's dolphins, a near cousin to the northern endangered Maui's dolphin. After this we head for a look in close to the rocky shore near the coastal highway to view some of the New Zealand fur seals hauled out, before returning to find our surfacing whale again.

To extend the service life of these whale watching vessels repowering at this time makes sound economic sense. During the tourist season these vessels are doing four trips apiece daily, and soon clock up the hours. Already, Roger reports an estimated 20 percent in fuel savings alone, meaning that the decision to choose a Scania repower is going to produce the hoped for economic returns in a very short time, and all while reducing the company's carbon footprint.



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SPECIFICATIONS

LOA	17.9m
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Propulsion	Twin HJ391 Hamilton Jet water jets
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