

THE THREE

BY KEITH INGRAM

Auckland International Airport is surrounded by difficult terrain. Most of the airport is situated on reclaimed land set into the Manukau Harbour – which has exceptionally strong tidal currents, mudflats and mangrove swamps.

To be able to effectively respond to any emergency, design aspects such as the size, shape and type of rescue craft – including the equipment used by rescue services – must be carefully considered.

A traumatic air accident on February 17, 1979 saw the loss of two lives. Flight 4374, a Fokker F-27 Friendship 500 aircraft arriving from Gisborne, descended in dirty weather until it crashed into the Manukau Harbour 1025m west of the runway threshold.

The enormity of the rescue problems unfolded as the tide ebbed, creating strong tidal currents, then left the aircraft sitting on the soft mudflats – only to be flooded by the next incoming tide. While the airport rescue services had a SRN6 hovercraft, this was out of service at the time of need.

This fatal incident brought home many lessons, and sparked significant changes to the way Auckland's Airport rescue services would be structured in the future. The subsequent Commission of Inquiry recommended, among other things, that Auckland Airport upgrade its marine rescue services to create a two hovercraft capability and additional supporting watercraft.

Appreciating that time and tide waits for no man, adopting the Commission's recommendations for future improvements would be an evolving process with some trial and error along the way. Yes, there were some successes and numerous failures.

Differing craft, including helicopters, were trialed and discarded. Today's rescue fleet configuration is a result of the rescue team's research and evaluation work in recent years.

Every international airport which has a significant proportion of aircraft movements over water is required by the International Civil Aviation Organisation (ICAO) to provide a specialist rescue facility, capable of an effective response in the marine area around the airport. Marine rescue craft are required to be able to transport sufficient flotation equipment to an accident site, to support the number of people carried in the largest aircraft. In Auckland's case, at present this is the new double-deck Airbus A380 now operated by several airlines. These aircraft can be configured to carry as many as 850 passengers!

At the recent launch of three new vessels for Auckland Airport Emergency Services' new primary marine rescue response capability, Auckland International Airport's chief executive Adrian Littlewood said, "The \$5 million marine rescue fleet upgrade ensures the airport will comply with international requirements as the number of aircraft and passengers coming to Auckland increases. While many airports around the world are located close to a sea, few have marine environments similar to the Manukau Harbour. Fortunately, Singapore's Changi Airport does, so as part of our upgrade we worked alongside Changi's emergency service team, sharing our respective experience and

observing and learning from each other."

Littlewood said, "The Manukau Harbour experiences a variety of conditions, including significant tidal flows and mudflats. Because of this, we have had to purchase a variety of marine rescue vessels to ensure that equipment can be deployed in the event of an emergency at any time, in any foreseeable conditions."



MUSKETEERS





ON-SCENE COMMAND AND CONTROL VESSEL **PAORAE**

The new on-scene command and control vessel is a Teknicraft foil-assisted rescue catamaran. Built by Q-West Boatbuilders in Wanganui, this 12m waterjet-propelled vessel is designed as a rapid response emergency command vessel. *Paorae* is able to carry emergency equipment – including foam delivery firefighting equipment – as well as acting as a forward-control operational base from which other rescue craft can operate.

The reasons given for choosing this type of craft are its proven sea-keeping abilities, rapid response speed, and stability at rest. Plus she also offers the ability to settle on the puddy when the tide runs out – leaving a stable platform from which to operate near the emergency or crash site.

The hulls and deck are constructed in 6mm marine grade 5083 alloy plate, while the cabin is in 4mm. Apart from some emergency checkered detail stick-on vinyl, the exterior of the vessel has been left to weather in its natural aluminum patina look.

Paorae is fitted with reverse sheer, forward-facing windows and a short eyebrow above – to eliminate glare and increase space at the main conning position of the deckhouse. Large SeaMac windows fitted in the deckhouse/command centre offer excellent all-round vision for the crew and skipper.

We step aboard through the rescue recovery zone, which is a large cut-out well in the deck, starboard side – with a fold-out section of the hull. This arrangement allows easy side-access for the crew to recover swimmers or floating survivors from the water. The fold-out section can also serve as a boarding ramp when the vessel is grounded on the mud.

Portside aft is a small head and washroom, complete with a chemical toilet. Stepping inside, there is a small tea-making

facility to port with an under-bench fridge for crew refreshments while on duty. To starboard is a command chart table seating four, with a fold-out extension which doubles as the emergency medical table, capable of supporting a patient in a recovery stretcher while receiving first response medical attention.

To port is the on-scene commander position. Ahead of this is the navigator-communications person, and a conning position to starboard. The layout is clean and simple, with all the vessel's operational aids and gauges within easy reach and eye focus.

The electronics system, supplied by ATL, consists of two 12 inch Simrad NSE multifunction displays – chosen for their rugged hardware design and super bright displays. A Simrad 4G broadband radar offers super high target detection at closer ranges. An AIS receiver is installed for monitoring other vessels on the multifunction displays, with a transmit-and-receive AIS 'black box' manufactured by Simrad.

Also of interest is the Structure Scan Transducer which operates at extremely high frequencies and was chosen to assist in locating planes in shallow water. (Fortunately, this has not yet been used for that function.) It provides high resolution images of what is happening on the bottom of the sea floor.

As with the hovercraft, a high-resolution FLIR thermal camera is also built into the system, with the images coming up on the bright LED multifunction displays to assist when conducting searches in the dark. This display is positioned port side for ease of access for the navigator.

Simrad RS35 VHF marine radios, as well as the airport's secure radios, are fitted with hi-gain antennas for reliable communications.

For the three person operational crew the cabin is fitted with



Myles Fothergill at the helm during sea trials



Command control station



The command chart table/ambulance station

three KAB 515 SWC T1 sprung safety seats with arm and head rests. There were supplied by Tidd Ross. There's additional bench seating at the command planning table. The deckhouse is fully lined with comfortable, easy on the eye décor.

The main deckhouse is fully walk-round, with a protected cross walkway, built in front of the deckhouse, that allows the crew access to the anchor, and the large fixed firefighting rotatable nozzle mounted on the bow.

This is a Tornado fixed installation directional water spray, foam and deluge branch pipe. It can deliver 1300 litres per minute at 7 bar (or 350 gallons per minute at 100psi). *Paorae* carries 60 litres of foam concentrate to combat fuel fires. Extra 20 litre containers can quickly be supplied from the airport ▶

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Underway during sea trials



Looking aft – note the tow post



Rescue zone



Small crew galley

emergency service base.

Paorae is powered by twin Yanmar 6LY3-UTP 279kW marine diesels coupled to ZF 220 gearboxes powering twin Hamilton HJ-292 waterjets with blueARROW controls. This combination delivers a sprint speed of 40 knots with an economical service speed of 3.23 litres/nm at 25 knots. With fuel tankage of 1000 litres, this performance offers the vessel an operational range of 278nm – more than adequate when working the western approaches to Auckland Airport on the Manukau Harbour.

60 litres of fresh potable water are carried for crew and

medical use. Aft is a large working rescue deck with two large rescue reversible 30-person life rafts mounted in quick-release, easy to deploy cradles.

There is a Tohatsu VC52AS emergency fire pump mounted just behind the deckhouse as well as a Honda 5.5kW portable generator mounted under its own protective housing to provide emergency power for rescue tools, lighting etc.

Paorae has already proven her ability to handle the Manukau's snotty chop, and while still in crew training mode, the vessel has already proved her ability to meet



The Honda genset



The fire pump

the expectations of crew and management.

With the exception of the two hovercrafts, which have their own ramp and base on the southern side of the airport, the remainder of Auckland Airport Emergency

Services' rescue fleet (including the 'Protector' wildlife hazard vessel) are hauled on their own purpose-built trailers to and from the rescue base near the eastern approach on the tidal Pukaki Creek.

This ramp allows the crew to have all-tide water access to the harbour – an important consideration for responding in urgency to an incident on the harbour.



Yanmar power below

SPECIFICATIONS

LOA	11.9 m
Beam	4.5 m
Draft	0.5 m
Power	2 x Yanmar 6LY3AM-UTP marine diesels
Gearboxes	ZF220
Propulsion	Hamilton HJ292 Waterjet
Sprint speed	40 knots
Service speed	25 knots
Fuel capacity	1000 litres
Crew	3
Builder	Q-West Boatbuilders
Design	Teknicraft



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