



## **VESSEL REVIEW**

### **23 MARCH 1999**

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#### **“ROEBUCK BAY” SET TO PATROL FOR AUSTRALIA**

*Austal Ships delivers the first of eight patrol boats for the Australian Customs Service*

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Western Australian shipbuilder Austal Ships has delivered the first of eight 38 metre *Bay Class* Patrol Boats - “Roebuck Bay”, to the Australian Customs National Marine Fleet.

Austal was awarded the tender in May 1998 to supply the Commonwealth of Australia with the new class patrol vessels after an exhaustive selection process, including amongst other criteria, compulsory tank testing. The next two vessels are scheduled for handover in August 1999 followed by two in February 2000 and the remaining three by August 2000.

The 38 metre aluminium hulled “Roebuck Bay” has a range of 1000 nautical miles and will be capable of operating around Australia’s 37,000 kilometre coastline and out to the edge of the 200 nautical mile Exclusive Economic Zone. Powered by twin MTU 16V 2000 M70 engines, “Roebuck Bay” achieved a speed of 20.5 knots at 80% MCR in Sea State 3, 0.5 knots in excess of the contract requirement.

It also has the ability to maintain speeds of less than 5 knots for extended periods as required for surveillance operations. In combination with its fast tenders (RIBs), “Roebuck Bay” will be capable of sending boarding parties to other vessels ranging in size from a small dinghy to a large merchant vessel. The vessel and its 12 crew will be capable of enduring 28 consecutive days at sea. An additional 12 passengers/ “survivors” can also be carried.

Following handover of “Roebuck Bay”, an intense two week Customs crew training and familiarisation program was undertaken at Austal’s shipyard, including handling of the vessel and its tender boats and engine training courses, to ensure the vessel is utilised to its full capabilities.

In co-operation with Stirling Marine Services (a division of Adsteam Marine Limited), Austal will provide a comprehensive maintenance program for the vessels for a period of 3 ½ years in which it is required to maintain the fleet at the various Australian ports and regions in which the vessels will operate. In the terms of the contract, the Commonwealth has the option to extend the maintenance service to a ten year period.

“Roebuck Bay” features a semi-displacement hullform with a fine waterline entry designed for minimum resistance at 20 to 22 knots whilst providing maximum comfort in a seaway. As part of the tender process, the hull was tank tested to compare vertical accelerations with existing Customs vessels and other proposals. Streamline tests were also performed to align the bilge keels and ride control fins with the flow along the hull body. As the vessel is expected to spend time either stationary or at slow speeds in beam seas, passive roll stabilisation was enhanced with the addition of shaft support skegs and bilge keels.

For roll and pitch control, an Austal active ride control system consisting of rotating cantilevered fins amidships and flaps aft was fitted to optimise crew comfort and vessel

performance at higher speeds. The system includes a facility to dynamically trim the vessel from the wheelhouse. The vessel is fitted with a bow thruster to assist with manoeuvring in difficult weather conditions and is capable of moving sideways at a minimum of 20 metres per minute and turning 360 degrees in its own length within 90 seconds. Large oversize rudders with quick response are fitted to provide steerage at low speeds.

The propulsion system consists of 2 x MTU 16V 2000 M70 main engines, rated for 1050kW each at 2100 RPM, coupled to Reintjes gearboxes and 4 bladed 1.15m diameter Veem propellers. The MTU 2000 M70 engines were chosen due to their ability to operate at low rpm for extended periods without detriment, thereby achieving the required minimum operating speed of 5 knots.

## **THE VESSEL**

### **Bridge and Operation's Room**

The central elevated Bridge provides 360 degree vision and is outfitted with an engineering station, a helm position, an officer of the watch position and a master's station. Main propulsion and bow thruster controls are repeated at the wing stations, where a clear view of the tender launch and recovery areas can be obtained. All machinery and monitoring systems on board the vessel are controlled from the engineer's station.

Main Bridge equipment features are 2 x Leica DGPS, Transas ECDIS display, Racal Decca 3cm and 10cm radar and ARPA and a C Plath autopilot integrated with gyro. The operation's room located aft of the bridge is an ergonomically designed communications station. Main equipment features are a GMDSS system for area A3, CYCOM field data terminal and printer compatible with Customs communications systems, separate UHF for communicating with both Customs and the Australian Defence communications system and an encrypted satellite facsimile.

### **Accommodation**

The accommodation aboard "Roebuck Bay" is comfortable and easy to maintain. Features include an operation's room, ship's office, interview / recreation room, mess, galley, galley storage, sleeping quarters, ablutions and laundry.

Noise levels do not exceed 70 dBA in any internal area and are limited to 65 dBA in the bridge and interview / recreation room. Floating floors and resiliently mounted wall panels were fitted in the sleeping quarters and the interview / recreation room. The noise levels in these two areas were considered critical for a quiet sleeping environment for the crew and also to enable the recording of legal interviews. The interview / recreation room located amidships on the main deck is capable of simple conversion to sleep 4 people. It is equipped with seating for 8 people, record of interview equipment, and an audio visual system.

The sleeping quarters located within the hull consist of 6 lockable 2-berth cabins, each containing a desk, chair and wardrobe space. Forward of the sleeping quarters is the ablutions and laundry area, containing showers, toilets with handbasins and laundry / cleaning equipment. Forward of the ablutions / laundry area is a storage void, access to which can be gained from both the galley storage area and the laundry.

The large and fully equipped galley is located forward on the main deck. The mess consists of 2 tables and seating for 12 people. Situated in the mess is a secure armoury for rifle and side arm storage and a storage locker containing 12 sets of body armour and utility belts. Adjacent to the galley is a large freezer, refrigerator and dry storage facility, capable of carrying

sufficient stores for 12 people for 28 days. The ship's office contains all standard office equipment, complete with a lap top computer and docking station, a monitor for repeating bridge displays and seating and table for 4 people.

Dimmable red lighting is fitted through out the vessel interior, and the vessel is capable of being blacked out when required.

### **Workdecks**

The deck layout is designed to comply with occupational health and safety principles and to facilitate all possible combinations of functions that the vessel is expected to perform, with emphasis on safety, efficiency and a minimum number of trip points.

The aft main deck area is well equipped and ease of crew movement in this area is assisted by well placed handrails and bulwarks. Railings and gateways are arranged to facilitate the recovery of objects from the water, the removal / replacement of equipment from the engine room and the loading / offloading of cargo. Recessed tie downs are fitted on the main deck to enable secure cargo handling. Cargo and vessel machinery can be handled via a marine cargo crane situated on the upper deck aft of the operation's room.

Forward of the tender Launch and Recovery davits are petrol fuel tanks fitted with pumps, for tender refills. In case of fire, the tanks are designed for quick and easy removal overboard. Upright self supporting ladders allow easy access to and from the tenders.

Forward anchoring is via a Muir vertical windlass and chain locker. Aft of the forward anchor is a large self draining storage locker, fitted with rope baskets and hanging hooks. An aft anchor and Muir windlass arrangement is provided for storm anchoring. The windlass can also be used for towing operations.

Vessel towing is facilitated by 3 towing bollards across the transom. The centre aft bollard has a towing capacity of 12 tonne. A total of 10 bollards (excluding the centre aft bollard) are situated around the main deck, to enable ease of docking at any wharf type, under any weather condition. Mounted aft of the transom is a full width dive platform with access via permanent stairs and a transom gate, to support SCUBA diving operations.

Aft of the superstructure, is a permanent semi-enclosed area with removable bench seating for 12 additional passengers, with access to deck toilet and shower facilities. Shore power and bunker stations are situated both port and starboard for ease of docking. Flood lights placed around the vessel enable all decks and the water within 10 metres of the vessel to be illuminated at night.

### **Endurance**

As the patrol boat can be at sea for up to 28 days at a time, the vessel has been fitted with a number of items to enable both the crew and vessel to function effectively for extended periods. Aft of the engine room is a fully equipped workshop with bench and vice. Lockers contain an extensive set of tools, consumables and replacement parts. Spare oil tanks fitted with transfer pumps and a large sludge tank cater for complete hydraulic and lube oil changes at sea. Each hull compartment containing heavy equipment is fitted with watertight soft patches and a number of lifting lugs at client specified positions for easy transfer and removal.

Generator sets are 2 x Cummins 6CTA 8.3G rated for 135kW (e) and are capable of running in parallel. Each generator is able to supply the entire electrical load of the vessel with a 10%

reserve, (excluding bow thruster startup). For backup in case of an emergency, a 10kW generator is housed within the funnel structure on the aft deck.

Fresh water is supplied by 2 fresh water makers and a total of 2000 litres tankage. Each fresh water maker is capable of supplying 1000 litres per day. An IMO approved sullage treatment plant capable of supporting 16 people continuously allows the vessel to operate in all Australian ports and all environmentally sensitive areas, such as the Great Barrier Reef.

### **Tenders and Launch and Recovery Systems**

The patrol boat's most crucial items of equipment with respect to its tasks are the tenders and launch and recovery system. The ability to launch one or both of the custom-built tenders fully loaded in up to Sea State 4 enables the Australian Customs Service to perform a large variety of functions, from intercepting unauthorised vessels, smugglers and illegal immigrants to assisting with scientific and marine research. The tenders can also be launched and recovered safely and effectively while the Patrol Boat is making way at up to 5 knots.

The 6.4 metre centre console tenders are designed to the Australian USL Code 1C for restricted offshore waters and features a fully planing, deep V hull form of aluminium construction. With a pair of 90hp 2-stroke outboard motors and a 300 litre fuel capacity, each tender has a range of 150nm loaded to full capacity with 6 persons onboard, and a speed of 35 knots with 3 persons onboard. Main equipment features include a manually actuated self righting system, waterproof GPS unit, hull mounted depth sounder, a portable satellite telephone module and a collapsible protective canopy. Passenger seating is saddle seats with backrests, footstraps and handholds.

Launch and recovery is via a single point release system, capable of being safely connected and disconnected from the davit cable by a single crewman in all operational conditions. To complement the tenders, the Launch and Recovery system is an aluminium, hydraulically operated Vest davit.

The Bay class vessels are built to DNV R1 Patrol notation.

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