Hart Marine conduct trials on state-of-the-art Fast Pilot Boat

Bellarine Fast Facts

A Pantocarene-designed ORC 156.HR5 Fast Pilot Craft

Fully compliant with the AMSA M054/5 standard

Seating for 6 persons

Powered by twin 600hp Cummins QSM II diesel motors

Power delivered to two Mikado 750mm propellers through remote-mount MGX5135A gear boxes

Top speed of 29 knots – cruising speed of 25 knots

MELBOURNE-BASED Hart Marine will complete the construction and sea trials of a state-of-the-art pilot boat for Port Phillip Sea Pilots early in April 2013.

NAMED THE *Bellarine*, the vessel is a 16m ORC 156.HR5 fast pilot boat and is, according to Hart Marine MD Mal Hart, probably the most advanced of its kind available in the world today. She is Port Phillip Sea Pilots' third ORC vessel built for them by Hart Marine to a design which is a collaboration between Harts and French naval architects Pantocarene.

Port Phillip Sea Pilots has been providing pilots for shipping in Port Phillip Bay and Westernport Bay since 1839 and its pilots frequently encounter severe sea conditions in the Bass Strait, particularly in the often violent rip at the entrance to Port Phillip Bay.

The bay is a busy sea route for ships mainly destined for the Port of Melbourne which handles a significant percentage of Australia's container traffic. The vital nature of the ship traffic means that pilots must be prepared to work under any and all conditions, 365 days a year.

It was because of the dangerous conditions they often face that, after a worldwide search, the PPSP chose the ORC design as the safest and most effective to replace their existing fleet. Mr Hart said his company had been chosen to build the 14.3m Ranger III and the 18.1m Akuna IV and had delivered them in mid-2010.

Mr Hart said that the vessels had exceeded PPSP's expectations with Akuna IV, in particular, delivering thousands of hours of trouble-free service to the extent that the organisation had no hesitation in awarding Hart Marine the contract build a further vessel, the 16m Bellarine, in 2012.

So effective had the initial design proved to be in the extreme conditions encountered by PPSP that Bellarine was built to almost exactly the same design.

The build was completed to the client's stringent specifications in about 8 months and is fully compliant with the AMSA M054/5 standard, which is the requirement for new pilot boats in Australia from 2013.

One new safety refinement which has been incorporated in Bellarine is the addition of a forward-looking infrared (FLIR) camera. This technology is able to detect the heat given off by human beings and will make it much easier to find and recover any personnel who may be swept overboard.

Before being handed over to her new owners, Bellarine will be through an intense seven-day sea trial to test maximum, cruising and transfer speeds and to certify fuel consumption. In addition, the vessel's compasses were swung and she was subjected to a crash stop and steering test.

One of the most important tests was to check her stability curve to ensure that she will self-right if that is ever required. The sea trials will be conducted by an expert team from Hart Marine and representatives of PPSP, including the coxswains who will actually be responsible for operating the vessel.

Bellarine will be handed over to her new owners at a ceremony on 18 April 2013.

Characteristics

Bellarine is a Pantocarene-designed ORC 156.HR5 Fast Pilot Craft and one of the most advanced in the world, with exceptional levels of usability and safety even in the most extreme conditions. She is surveyed to carry a crew of two and four pilots and is fully self-righting in the event she ever capsizes.

The wheelhouse is well thought out with comfortable seating for 6 persons and a command chair and station amidships with excellent all-round vision. Olectric Systems supplied the Furuno electronics package including radar, echo sounder and plotter and Icom radios – all sited in a central console with everything being convenient and at hand for the coxswain.

The vessel has substantial Ocean 3 fendering around her hull, as well as cabin-mounted grab rails and everything required for the safe and speedy exchange of personnel between the boat and a large vessel, often travelling relatively fast in sometimes rough conditions.

Safety equipment was supplied by RFD and includes a 6 person RFD life raft sited to port on the aft deck.

The vessel is powered by twin 600hp Cummins QSM II diesel motors delivering power to two Mikado 750mm propellers through remote-mount MGX5135A gear boxes. These will give Bellarine a top speed of 29 knots, a cruising speed of 25 knots and more than ample power to tackle any conditions she will meet.

The wheelhouse is fitted with a Cummins C Command Elite engine monitoring and management system which features colour touch-screen instrument panels that display a wide range of data in text and graphics formats to help the operators monitor and maximise vessel operation and performance.

The ORC craft offer a particularly stable platform and, integral to this, is the unique hull design which has oversized rudders and wide trim-tabs that deliver outstanding manoeuvrability and sea-keeping characteristics. The hulls are light but super-strong and made from resin-infused E-glass with carbon fibre frames.

The design fundamental making the ORC craft unique are their wave-piercing beak hulls which evolved from years of tank testing and sea trials by Pantocarene and combine the characteristics of planing and semi-planing hulls. Vertical acceleration is reduced when compared to typical semi-planing hulls, with the best results being obtained at high speed.

In following seas, the beak hulls behave better than traditional planing or semi-

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planing hulls. The feature imparts inherent roll damping and the vessel slows only moderately as its beak bow pierces the next wave.

The ORC hull's efficiency is better than other hulls of similar displacement and fundamental to this is the power/weight ratio inherent in the structural design. Stiffeners are individually calculated on a longitudinal structure system that has a mean frame spacing of just 900mm. The result combines reduced hull weight with maximised strength.

The hull incorporates a low sailing trim which delivers high stability at high heel angles despite a relatively narrow waterline that facilitates self-righting. The wide decks add safety for the pilot and crew when un-berthing at speed and also reduce the risk of superstructure damage.

The hull line, shape and integrated fender system, also minimises the risk of the potential venturi effect that so often sucks traditional pilot boats to the side of a large ship at speed.

The composite materials used in construction and the fact that wheelhouse is resilient-mounted means that crew and pilots are protected from noise and vibration to a large extent and are therefore far less prone to stress and fatigue. The craft are fitted with twin 750mm five-blade propellers which have the effect of reducing cavitation and noise.

Company profile

Mr Hart was born and raised on the Mornington Peninsula and given that his father was a harbour master; he lived and breathed boats from his earliest years.

After an apprenticeship as a boat builder and solid experience as a shipwright, he founded Hart Marine in 1983 and began building cedar boats in a small factory in Mornington.

A commission to build the off-shore racing yacht Morning Mist made him realise that his future lay in boat construction using advanced carbon composite materials. The company then built a string of legendary racing yachts including Morning Mist, Wild Thing, Ausmaid, Scandia Wild Thing, Secret Men's Business, Limit and many more.

BY THE late '80s Hart Marine was already acknowledged as one of Australia's leading composite boat building yards for a list of discerning clients who insisted on state-of-the-art designs with all the strength and lightness of weight offered by composites.

By the early 2000s Hart Marine made the commercial decision to prioritise its thrust towards commercial boat building, something in line Mr Hart's own nautical up-bringing and traditions.

Having built a number of high-end corporate charter boats successfully, they felt easy with this new direction and, with a large group of repeat customers confirming a hard-earned reputation for delivering projects on time and on budget, they were awarded the sizeable contract to team up with French-based naval architects Pantocarene to build two pilot boats for Port Phillip Sea Pilots (PPSP).

Hart Marine has 25 full-time staff members at their purpose-built facility at 66 Yuilles Road in Mornington, Victoria.

The yard has the ability to build vessels up to 33 metres in length, although Mr Hart says they are most comfortable building mid-sized boats in the 14 to 25 metre range.

The future

The first two ORC pilot boats delivered by Hart Marine to Port Phillip Sea Pilots exceeded their expectations to such a degree that this was noticed by port and harbour authorities across the region and it soon led to an order for a 16 metre version, the Mokare, for the Port of Albany in Western Australia.

Mr Hart said that the vessel had been built and delivered to Albany in 2012 and confirmed that a further two 16 metre vessels had been ordered and were currently under construction at Hart Marine.

One of these is destined for the Geraldton Port Authority and the other was ordered by Chevron for use on their Gorgon Project in Western Australia.