First of Class Police Patrol Boat on Seawork Pontoon

One of the most interesting boats on the floating pontoon at *Seawork International 2007* will be the *Holyhead Marine*, 15m *MoD Police Patrol Boat*. This first of class boat, designed by *Camarc Ltd* and built by the Anglesey based yard is to serve as the next generation MoD Police craft. The new design GRP hulled vessel is also a natural for other patrol roles, the pilot boat market and other workboat applications.

Holyhead Marine's first of class 15m MoD Police Patrol Boat will be on the floating pontoon at Seawork 2007.

The Ministry of Defence Police (MDP) has the largest Marine capability of any police force in the UK, with units at HM Naval Bases at Devonport, Portsmouth and Faslane on the Clyde.

MDP Marine Police officers exercise constabulary powers and privileges in UK territorial waters in relation to Crown property. They escort and protect warships and submarines, both UK and international, within the Dockyard Ports. The waterfronts of the Naval Bases and associated support establishments are kept secure, and legislation is enforced ranging from Dockyard Port Orders and Byelaws to the Prevention of Collision Regulations and the Merchant Shipping Acts.

Arms Explosives Search (AES) Police Dogs are trained to support marine teams searching vessels for people hidden away or stowage of arms and ammunition. Teams of drugs search dogs are similarly trained to support marine operations.

Holyhead Marine is no stranger to the UK Ministry of Defence, having built a range of designs for the MOD and also carried out numerous MOD refits during the yard's 45 year history. Indeed Holyhead Marine's 9m aluminium hulled Offshore Raiding Craft (ORC) for the MoD, which was a star attraction on the floating pontoon at Seawork 2006, is now in series production

Holyhead Marine had built the last four of the 14m Watercraft designed police boats for the MOD and so was well aware of a potential market opening for a next generation MOD police vessel. To meet this need Holyhead Marine spent time working with Camarc on a speculative new design and so was able to put it forward as a first proposal in response to a request for information by the MOD. Holyhead Marine were also aware that they needed a new GRP boat for their range and so wrote a design brief for a boat to satisfy the patrol, pilot and workboat markets for a modern hull form capable of being powered by either conventional propellers or waterjets.

The MOD's current police boat fleet consists of the old 14m Watercraft design and Talisman 49 former range safety boats. The new requirement was for a faster, more manoeuvrable craft with enhanced safety features and capable of a more extended patrol role. The new design also required a fly bridge and more sophisticated electronics.

The MOD issued the Invitation to Tender in March 2005 for design, build and in-service support of MOD Police Boats. The tender was for one first of class boat with an option for up to eight further craft . When the tender was issued, Holyhead Marine and Camarc developed and refined their original design proposals and submitted a bid for the boat and support package in May 2005 against extremely tough competition. The contract was awarded to Holyhead Marine in January 2006.

Considerable production design effort went into optimising the build process for efficient production. This is a brand new product and prefabricated modules and other techniques were used to reduce production build times

This boat uses jets to provide high manoeuvrabilty and the Rolls-Royce Vector Stick control system for the RR FF375S waterjets gives impressive and easy control. In addition to the main wheelhouse position, there is also control station on the fly bridge. The engine room houses twin Caterpillar C18 marine diesels, heat exchanger cooled and rated 715hp at 2,100rpm which drive the waterjets through Twin Disc MG 5114SC gearboxes, each fitted with electric shift and directly controlled by the Vector Stick. With a design philosophy intended to ease ongoing maintenance, large deck hatches are fitted for easy access and the resiliently mounted engines can be removed by a direct lift through the main deck for overhaul or replacement.

The wheelhouse is arranged amidships flush with the main deck and has the main helm seat and console on the ship centreline. The all round visibility is excellent, front screens are heated and all have variable speed Hepworth 50NM pantograph wipers. The adjustable helm suspension seat is supplemented by two ➢➢

➢➢ more suspension seats for navigator and observer and there are five more fixed seats on an 'L' shaped settee. The wheelhouse and forward cabin both enjoy heating and air conditioning.

This boat has been designed to be future proof, with large alloy fascia panels giving good access to inside the console, making replacement and updating of equipment and navigation aids easy. Lifting the panels reveals little inside, as the DC wiring systems are so dramatically reduced by the use of the Empir-Bus DC electrical distribution system.

MOD police boats spend a lot of time on slow speed patrol and so generator life is a significant issue. To address this problem as well as controlling weight, new and innovative systems fitted to this vessel include Empir-Bus for the control and distribution of electrical systems, Victron Inverters supplying 240V AC power, and a Fischer Panda automatic start/stop DC generator which delivers the supply for battery charging and inverter load.

The boat will spend much of its time on low speed patrol, so generator life has been carefully planned for.

The arrival of smart inverter-chargers enables the DC generator to be offered as a solution for any power generation system. The Victron Multi-Plus enables all AC consumers on board to be run from the batteries and the smaller Fischer Panda 6kW DC generator operating on automatic battery sensing mode runs only when the domestic battery bank drops to a preset low level.

Holyhead Marine had used Composite Mouldings Ltd (CML) at Marchwood, Southampton previously to produce mouldings for the ORC project and a first big decision was to use CML as the subcontractor for tooling and mouldings on the new design. Working with CML and Camarc a 3D model of the design was developed and, with on-site CNC cutting facilities, cut components for the plug tooling ensured the accuracy of the finished mouldings.

The GRP hull is a one piece moulding, with primary stiffening by way of longitudinal engine bed and the integral tank construction. There is suitable local reinforcement. The deck is a one piece balsa cored GRP moulding, joined to the hull by a bonded flange and supported on a series of deck beams and longitudinals. The superstructure is moulded in two parts, the lower section being part of the deck moulding and the upper half being a separate moulding. The two balsa cored GRP mouldings are bonded together below the window line.

The hull moulding was completed July 2006, the deck and superstructure in September, all moulded under Lloyd's survey. Close design engineering and a very detailed level of weight control means that these conventional polyester resin mouldings were delivered to within 1% of the design weight

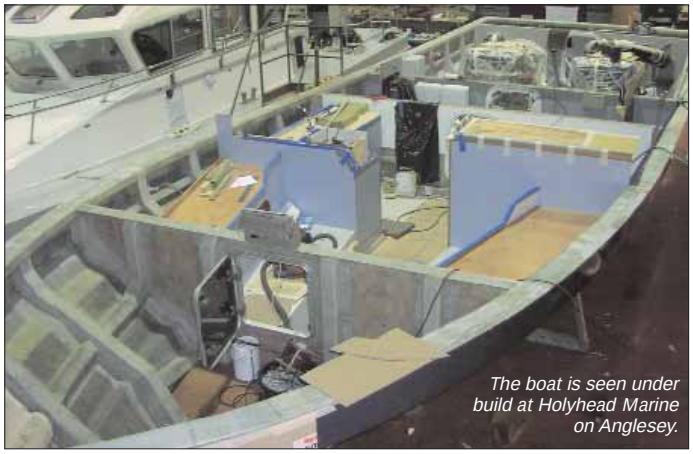
Externally, there is great ➢➢

➢➢ attention paid to operational detail, a separate anchor stowage bin forward draining overboard, Hadrian safety rails, matt finished stainless steel work, remote operated liferaft deployment systems and a transom platform designed to ease the retrieval of casualties from the water using a purpose designed MOB davit.

Internally the broad layout is a watertight compartment at the forepeak to provide storage, accessed via a watertight hatch in the bulkhead. A GRP sole moulding provides a base for the lower deck compartments. The accommodation space is arranged with a galley aft to starboard and a seating/mess area which will accommodate eight persons. Aft of the mess to port is a WC space with shower. In these areas, prefabricated furniture units make up berth/settees, locker, galley and WC unit and are attached on the sole moulding. Access to the forward accommodation is via steps from the wheelhouse at main deck level and there is an escape hatch fitted in the coachroof.

Daily access to the engine room is by a watertight aluminium deck hatch on main deck level and by a door in the bulkhead. The aft peak section of the engine room contains the waterjets, steering gear and a small amount of space for access and maintenance. In the machinery space itself a Pyrogen fire extinguishing system is fitted, manually operated from the wheelhouse. Intake air to the engine room arrives via a flow through port and starboard vent trunks, fitted with Delta T moisture removal filters. Extractor fans exhaust from the forward end of the space. Halyard insulation creates an efficient sound barrier in boundary areas with accommodation spaces. A wet system main exhaust runs from a steel riser bend on the engine directly into a stainless steel mixer box. The main fuel tanks, forward of the engine room and with a capacity of 2,550 litres, are fabricated integrally to the hull in GRP, with one tank each port and starboard of the ship centreline.

The bilge system runs in UPVC piping within the engine room. A 1.5in pump driven from the port engine is fitted with an electro-magnetic clutch and a vacuum switch to prevent dry running, all controlled through the Empir-Bus system


The boat is seen under build at Holyhead Marine on Anglesey.

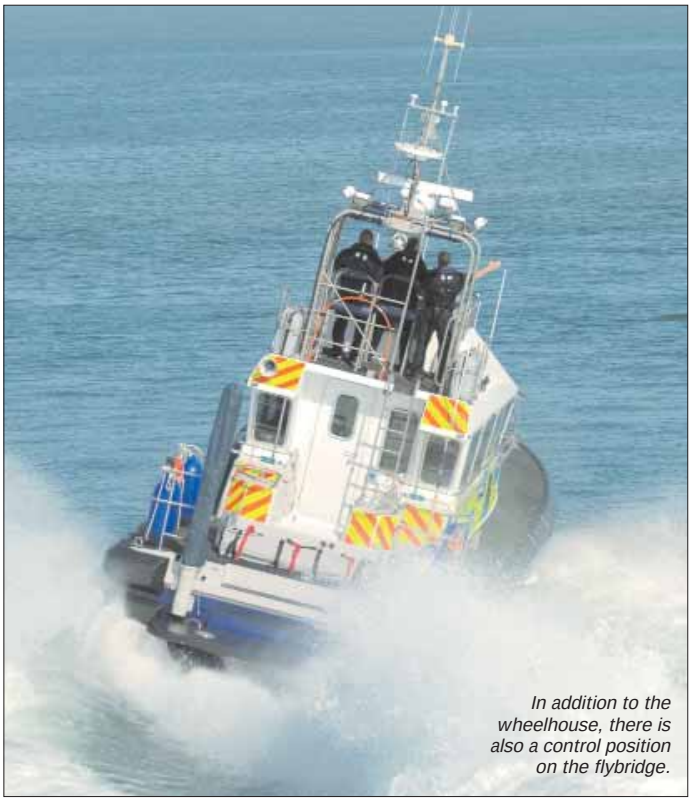
The new design also incorporates a low light and thermal imaging camera and an evidence recording system, particular MoD requirements. This Seenite surveillance system, together with the navigation package, was supplied and integrated by Ambex. The Furuno navigation aids includes the SC50 satellite compass system, M1933/CB radar, a 15” LCD display, GPS, ETR/6/10 depth and bottom profiler, NX 700 Navtex, FA150 AIS and LH3000 loudhailer. Sailor supplies the RT5022 VHF/DSC and a handheld SP3300 GMDSS VHF.

The finished boat measures 14.9m LOA including fender and has a beam including ➢➢

The very business-like helm console.

➢➢ fender of 4.5m. Displacing some 19.9 tons fully loaded, within 0.5% of the design target weight, the boat has a draft of 0.98m and a top speed of 33 knots in that condition. It has been designed to have a minimum service life of 20 years and built to Lloyds Special Service Craft rules whilst also satisfying the MCA Unified Code of Practice for Small Workboats. It is expected to operate in typical swells of 2.5m and perform a duty cycle of some 2,500 hours per year.

This first of class boat was launched in March and accepted by the MOD in May. It worked straight out of the box and performed beyond expectations during trials. It was not phased by severe weather across Cardigan Bay as it made its delivery voyage from Holyhead to Portsmouth. It is undertaking further trials with the client at Portsmouth, Plymouth and Faslane as an order for further craft by the MOD is anticipated.



In addition to the wheelhouse, there is also a control position on the flybridge.

Versions of this impressive new 15m craft have already been developed for patrol, pilot and workboat roles. Visitors to **Seawork 2007** will be able to inspect this innovative new patrol boat on the floating pontoon.

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