

Tri-Hull Patrol Boat Undergoes Sea Trials in Canada - October 2005

By: Staff

Reflex Advanced Marine Corp. (Hamilton, Ontario, Canada) is putting its Kevlar-reinforced (DuPont, Wilmington, Del.) 40-ft/12m, gas- and diesel-powered tri-hull patrol boat to the test as it undergoes sea trials off St. John's, Newfoundland. The Reflex Advanced Marine (RAM) tri-hull design is said to be highly manoeuvrable, very fast, extremely stable and fuel-stingy. The resin-infused hull features a tailored hybrid reinforcement of drapeable Kevlar/glass fabric from an undisclosed Montreal, Quebec, Canada-based supplier. The hybrid material is used to keep costs reasonable while still offering all of the desired properties. The hull is a single, quasi-flexible laminate that more readily absorbs impact and can be made to offer small firearm ballistic protection. The vessel is fitted with a top deck gun mount, on which a C6 machine gun can be positioned. A potential customer from the Middle East is evaluating the boat for patrol duty off its shoreline.

Source: Reflex Advanced Marine

Previous independent trials comparing the Reflex tri-hull to a traditional V-hull design showed that the Reflex design has considerable potential, says the company. The design, named the Stalker, places two gas turbine engines in the outer hull sections to enable it to move quickly alongside suspicious vessels. Mounted in the center hull section is a diesel engine, which is used in patrol-loiter mode for maximum fuel efficiency. The vessel can be made in lengths ranging from 22 ft to 150 ft (7m to 46m) and can accommodate one, two or three engines in a variety of configurations. For a security craft where ballistic protection is required, additional composite material can be added.

Courtesy of Composite News International

Revolutionary Canadian Tri-Hull Design Undergoes Sea Trials



Hamilton, Ontario, Canada, May 9, 2005:

Backed by a U.S. patent for its revolutionary Kevlar tri-hull design, Hamilton's Reflex Advanced Marine Corp. (RAM) now has a twin turbocharged diesel-powered 40-foot patrol boat undergoing sea trials off St. John's Newfoundland.

Highly manoeuvrable, very fast, extremely stable and fuel-stingy, the Reflex Advanced Marine (RAM™) tri-hull design is currently undergoing sea trials off St. John's Newfoundland. The company, based in the Hamilton Incubator of Technology Centre, holds a U.S. patent on its unique design. The vessel is fitted with a top deck gun mount on which is mounted a C6 machine gun for the sea trial. The potential customer from the Middle East is evaluating the boat for patrol duty off its own shoreline.

"We're very pleased by the attention our tri-hull designs are receiving from around the world," said RAM President Ian Taylor. "Because the form is so stable and can be configured in lengths from 26 to 150 feet, the hull is applicable to a variety of uses, including fast ferries, search and rescue craft and security and defence and security vessels."

Taylor, a Master Boatbuilder and Yacht designer from the UK adds: " Right now, we're responding to bid requests from North and South America, Europe, Afro India and Asia.

"There is increasing awareness of our vessel's high-speed and fuel efficiency potential and inquiries regarding our stealth and ballistically protected craft is rising."

The company's Stalker™ design is powered by two gas turbine engines in the outer hulls to move it quickly alongside suspicious vessels. A diesel engine is mounted in the centre hull for maximum fuel efficiency while in patrol-loiter mode. The craft's Kevlar hull and deck design employs the latest radar deflecting technology for near invisibility on the water.

One U.S.-based manufacturer of traditional V-hulled yachts for charter operations has expressed interest in the Reflex™ design, said Taylor. "The V-hull designs tends to rock and roll a lot in rough water conditions but the tri-hull is extremely stable. With our asymmetrical outer sponsons (hulls) you can build a mega-yacht - 150 feet long - that can be configured for six identical cabins unlike converted one-owners with one or two larger cabins."

Launched in 1993, Reflex Advanced Marine has raised its own private funding for research and development. The company 's offices are located in the Hamilton Incubator of Technology Centre.

About RAM Corporation and its tri-hull design:

- Innovative tri-hull design called Reflex™ delivers a smooth, stable, shallow-draft ride with fuel-stingy economy.
- Current vessel designs are from 26 to 150 feet in length.
- Can accommodate one, two or three engines in a variety of configurations.
- The multi-innovation U.S. patent will help protect the company's intellectual property as it responds to security, defence and commercial opportunities, especially in the United States.
- Canadian and world patent rights are still pending but should move forward with the success of the U.S. application.
- Several independent test reports have confirmed the outstanding efficiencies and lower horsepower requirements of the Reflex™ tri-hull design and the success of the 12-year development program.
- Launched in 1993, Reflex Advanced Marine Corp. has raised its own private funds through internal sources for research and development. It now holds valuable assets, which includes a multi-innovation design patent, pending patent documentation, 33-foot hull tooling, prototype craft and several trademarks.
- RAM™ has a Canadian Security level "B" clearance and operates an ISO 9000 quality assurance program.
- The company is currently focused on marketing its revolutionary products in two major sectors: Security & Defence and Commercial. This includes patrol craft, search & rescue craft, police vessels, fast ferries and workboats. The design will also work well in the recreational market but RAM™ plans to search out and license the design to market savvy boatbuilders who are looking for an aggressive edge in their market.

RAM™ bidding on Canadian and offshore contracts:

- RAM Corp. is currently bidding on a high-speed patrol and chase vessel, complete with an array of electronic tracking and surveillance equipment, full electronic navigation and instrumentation package, for a security agency. The design incorporates three outboard engines and a performance package aimed at the safest possible operation in all weather at a classified top speed.
- The company has also bid on the design, construction and supply of eight search-and-rescue (SAR) craft in Africa. The design submitted is RAM's 30-foot SAR rigid inflatable, open cockpit boat (RIB) with twin outboards.

Stalker™ is innovative stealth vessel

- The company's Stalker™ design uses the centre hull to house a cruising diesel for maximum fuel efficiency while in a patrol/loiter mode. Two gas turbine powered water jets in the outer hulls can move the craft very quickly alongside suspicious vessels under shroud of stealth. Its composite hull and deck design and internal systems employ the latest radar deflecting technology for near invisibility on the water.

How the Reflex™ tri-hull design works

- Advanced hull design removes the major disadvantage of the catamaran - twin-hulled craft that are fast in a straight line but unstable on turns when they hit waves. At high speed, the RAM™ design planes like a catamaran but in heavy seas, the slightly shorter centre hull acts as a wave-breaker. It also helps stabilize the craft in cornering.
- The hull's smooth, stable, fuel-efficient ride is perfect for fast ferries and water taxis, accommodating good numbers of passengers safely in coastal and harbour duties.
- The tri-hull and its highly developed twin tunnel design make very little wake - a positive feature in environmentally sensitive waters and where shoreline erosion is a problem.

Fiberglass/Kevlar(tm) laminate beats aluminum in "drop test"

- The construction materials chosen for RAM™ advanced composite products includes Kevlar™ and fiberglass woven fabrics and high performance resins, proven in drop tests to be superior to traditional marine aluminum plating.
- During recent independent impact tests, a pendulum spike delivering a 96 joules impact (almost equivalent to the impact of a small handgun) bounced off a RAM™ panel representing the hull bottom, sustaining little more than a scratch. The spike passed right through a similar weight and thickness marine aluminum panel.
- For security craft where ballistic protection of occupants is required RAM™ can tailor or add to its composite hull and deck construction to meet or exceed customer threat requirements.

Cost-effective hull design:

- Central to the RAM™ hull design is its cost-effective tooling and manufacturing systems. By adding varying length tooling inserts both lengthwise and across the beam, a RAM™ mould can produce craft from 33 to 45 ft in length and 12 to 14 ft in beam from the same set of tooling. This expansion capability dramatically lowers capital tooling costs. A single RAM™ mould with inserts can build a variety of vessels for different capacities and uses as apposed to one mould per design.
- A 40' prototype Patrol Vessel has been completed at Seacraft Limited, Newfoundland (a RAM™ licensee) and is currently undergoing extensive performance testing and is being made available for customer demonstration.

Background on Ian Taylor, RAM Corporation designer and President:

- Born and raised in Southampton, England, he earned Shipyard Joiner and Master Boat Builder certificates with world-renowned Camper & Nicholson Ltd, UK.
- He completed courses at Southampton College of Technology and the Shipbuilding Training College in the UK and later took yacht design courses at Bristol University.
- Taylor has applied his training around the world. In 1974 he was project manager at a Greek marine manufacturing company producing 40 boats per month.
- In 1980 he joined the design team of Carter Offshore in Massachusetts and later moved to Canada as Yacht Designer and Research Manager for well-known Niagara-based C & C Yachts.
- Later, as a consultant to E.I. DuPont and DuPont Canada he helped lead the development of Kevlar/glass hybrid fabrics and traveled extensively demonstrating its uses to major boat-building companies.

Ian Taylor, President of Reflex Advanced Marine, Hamilton, Ontario, at (905) 690-2179.