The X-Craft factor

The U.S. Navy's 50-knot Littoral Surface Craft-Experimental, better known by the more-catchy moniker, "X-Craft," was recently christened *Sea Fighter (FSF-1)* at Nichols Brothers Boat Builders in Freeland, Wash.

The *Sea Fighter* is being built for the Office of Naval Research and will be used to test a variety of technologies that will allow the Navy to operate more effectively in near-shore waters. The 73-meter (262-foot) by 22 meter (72-foot) aluminum catamaran will be used to evaluate the hydrodynamic performance, structural behavior, mission flexibility, and propulsion system efficiency of high-speed vessels and also will serve as a "guinea pig" for developmental mission packages. It will serve as a "risk reduction" experimental vessel for the U.S. Navy's Littoral Combat Ship (LCS) and the U.S. Coast Guard's Deepwater Program concept of operation development at sea.

The X-Craft was designed by the U.K.'s Nigel Gee Associates, which also designed the high-speed vehicle ferries, *M/V Fairweather* and *M/V Chenega*, for the Alaska Marine Highway System (AMHS). The *Chenega* was recently launched at Derecktor Shipyards in Bridgeport, Conn.

By using interchangeable, containerized mission modules stored in its mission bay, the catamaran can be reconfigured quickly for a variety of missions. Potential missions include battle-force protection, anti-submarine warfare, amphibious assault, humanitarian support or mine countermeasures.

Working as the subcontractor to Titan Corporation, San Diego, Nichols Brothers laid the keel for the *Sea Fighter* in June 2003. The high-speed vessel will officially be delivered to the Navy on April 30, when its crew of 26 (16 Navy and 10 Coast Guard) will begin their certification. In August, the ship will arrive in its homeport of San Diego.

QUIET, PLEASE

One of the cutting edge technologies incorporated into the *Seafighter* is an advanced viscoelastic polymer coating to damp noise and vibration. The QuietShip coating is applied to the hull and mission bay of *Sea Fighter*. The coating is not only one-third lighter than standard Navy tiles, but also reduces noise by 15 decibels, a 65% reduction in perceived noise. QuietShip, an environmentally friendly (no VOC) viscoelastic polymer, was designed to be highly effective on High-Speed Craft and all other aluminum, steel and composite-hull vessels.

Kurt Yankaskas, NAVSEA Human Systems Integration, stated, "Noise can make the difference between excellence and 'at risk' performance." Yankaskas is considered the Navy's top noise and acoustical expert and has led the Navy's effort for the past decade to control noise in warships and has briefed the National Academy of Sciences (NAS) on the medical effects of noise.

"In Defense Department tests, noise hurt seven operational goals in the time and accuracy a task took to identify the enemy, target, shoot-to-kill and not suffer friendly fire. The X-Craft would have been a much noisier vessel without the QuietShip treatment."

NAVSEA collaborated with Noise Control Engineering (NCE), which simulated the X-Craft noise contours on the "Designer Noise" software modeling program.

QuietShip has American Bureau of Shipping (ABS) and U.S. Coast Guard certifications and type approval for installation in berthing areas, while the standard Navy damping tile can only be used in machinery spaces.

CODOG PROPULSION

Two MTU 16V 595 TE90 diesel engines and two GE LM2500 gas turbines supplied by MTU are used in a COmbined Diesel Or Gas turbine (CODOG) configuration with a combining gearbox specially built by Renk. The CODOG propulsion system drives four Kamewa 125 SII waterjets.

Rolls-Royce supplied the Kamewa 125 SII waterjets that will deliver 50.4 MW of power, driving the vessel to speeds of up to 50 knots while offering greater maneuverability.

The independent units make sideways movement possible, simplifying operations and berthing. Mixed-flow type pumps used in Kamewa waterjets provide higher than 90 percent efficiency ratings.

INTEGRATED BRIDGE

Northrop Grumman Corporation's Sperry Marine has supplied an Integrated Bridge and Navigation System (IBNS) for the X-Craft that integrates more than 200 separate bridge and navigation components. The IBNS includes a naval ECDIS, meeting the Navy's emerging standard for paperless charts, as well as a speed log, echo sounder, autopilot, radars, gyrocompasses, GPS and weather sensors. The bridge system is also integrated with engine and steering control systems and CCTV that can be used to assist in docking.

Steven Nordtvedt, X-Craft program manager, Titan Corporation, said, "Sperry Marine's innovative bridge layout provides the ship's pilot and navigator with full control over multifunction display consoles from a seated position using ergonomic armrest controls."

The X-Craft IBNS is designed to meet both IMO's High Speed Craft Code and the ABS Navigation and Integrated Bridge System requirements. **ML**

The X-Craft is designed to be reconfigured for a variety of missions