

# X-CRAFT... *in a class by itself*

Today's absence of a global naval threat to the United States has replaced the need to fight conflicts in the open ocean with the requirement to project sea-based power ashore. The surface Navy plays a vital role, with the Marine Corps, in projecting power from the sea. Being able to project power from the sea with expeditionary forces also requires operating efficiently in littoral, or near-shore, waters.

The Office of Naval Research is developing a high speed experimental vessel called Littoral Surface Craft – Experimental (LSC(X)), or “X-Craft.” This aluminum catamaran will test a variety of technologies that will allow the Navy to operate more effectively in littoral waters. X-Craft 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 test bed for developmental mission packages.

X-Craft's unique hull form combines the stability of a catamaran with the power of a combined diesel or gas turbine (CODOG) engine plant. Two MTU 595 diesel engines will supply power for cruising speeds while two General Electric LM2500 gas turbines will allow sprint speeds greater than 50 knots in calm seas. With active ride control actuators forward and aft, the vessel will be capable of maintaining 40 knots or more in Sea State 4 (2.5 meter waves). Four steerable Kamewa water jets will provide propulsion and maneuverability. X-Craft will have an unrefueled range of more than 4,000 nautical miles, allowing it to make independent trans-oceanic voyages. An installed “science package” of strain gauges, accelerometers, pressure gauges, and underwater viewing windows will provide valuable data on the performance of the hull structure in high sea states. Internal communications will be provided by personal communication system (PCS) wireless technology, eliminating the need to rely on hard-wired telephone systems.



Conceptual drawing of X-Craft



Conceptual drawing of X-Craft during flight operation

X-Craft is designed as a “sea frame,” that is, a ship that is capable of performing many missions. X-Craft will be the Navy's first sea frame that decouples hull, mechanical and electrical (HM&E) systems

from the mission packages, allowing for a true “plug and fight” mission module capability. Mission flexibility will be demonstrated through interchangeable “mission modules” (standard twenty-foot containers) housed in the X-Craft’s large mission bay. The mission bay will hold up to twelve containers, each with its own dedicated service panel, permitting rapid reconfiguration of the vessel to support a variety of potential missions including battle force protection, mine counter-measures, anti-submarine warfare, amphibious assault support, and humanitarian support. A multi-purpose stern ramp, with direct access to the mission bay, will allow X-Craft to launch and recover manned and unmanned surface and sub-surface vehicles up to the size of an 11-meter rigid-hull inflatable boat (RHIB) while underway. From its dual spot flight deck, X-Craft will be able to operate two H-60 type helicopters (and/or unmanned aerial vehicles (UAVs), including advanced vertical UAVs) at a time. There are no hangar or maintenance facilities for aircraft.

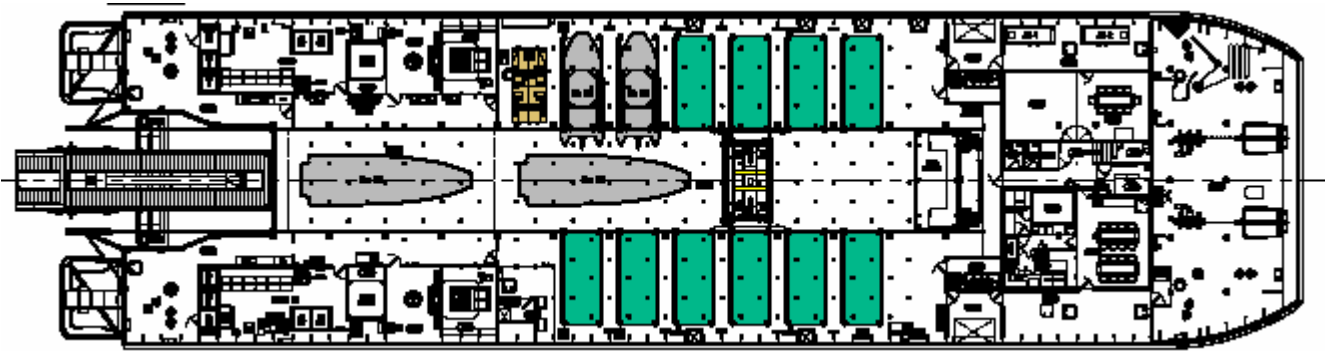
X-Craft will provide a platform for the evaluation of minimum manning concepts on future naval surface ships. A base crew of 26 (Navy and U.S. Coast Guard) personnel will be responsible for all operations and basic maintenance, requiring a significant shift in the normal levels of manning currently used to accomplish various missions and tasks. X-Craft also will be among the first U.S. Navy ships to employ “paperless” navigation through the use of the Sperry Marine Electronic Charting and Display Information System (ECDIS) and Voyage Management System (VMS). Typically, the ship will operate with just three watchstanders and one roving patrol to monitor and configure engineering systems. This reduced manning will be supported by a level of automation and sophisticated monitoring of systems and equipment previously absent on U.S. Navy ships.



Construction progress (Sep '04)

Preliminary design and shipyard selection were completed in March 2003, and the keel for the 80-meter-long X-Craft was laid in June 2003. The 950-ton (light ship displacement) ship will be launched in February of 2005. Following approximately two months of trials, X-Craft will be delivered at the end of April 2005. Operational control will then be assumed by the Navy’s 3<sup>rd</sup> Fleet with the ship operating out of its home port of San Diego, CA. After a brief period of operational evaluation and crew certification, X-Craft will conduct exercises in support of risk reduction for the Navy’s Littoral Combat Ship (LCS) as an “LCS surrogate”. Additionally, the crew will perform hydrodynamic testing and evaluation of the hull form and propulsion system, demonstrate mission module capabilities, and develop operational concepts to include battlegroup integration.

X-Craft is being built to commercial standards, with the American Bureau of Shipping (ABS), in collaboration with Naval Sea Systems Command, acting as the certification agency. It will be the first naval vessel built and delivered under the new ABS High Speed Naval Craft Rules.



X-Craft General Arrangement Plan View

## X-Craft Specifications

### DIMENSIONS:

Length (overall): 262 ft (79.9 m)  
 Length (at waterline): 240 ft (73 m)  
 Beam: 72 ft (22 m)  
 Draft: 11.5 ft (3.5 m)  
 Light Ship Displacement: 950 tons

### PERFORMANCE:

Max Speed: 50+ knots  
 Max Speed (Sea State 4): 40 knots  
 Max Speed (Diesels only): 20+ knots  
 Range: >4000 nm @ 20+ knots

### PROPULSION: Combined Diesel OR Gas Turbine (CODOG)

2 x GE LM2500 Gas Turbine Engines  
 2 x MTU 16V 595 TE 90 Propulsion Diesels  
 4 x Rolls-Royce 125SII Waterjets

X-Craft Prime Contractor: Titan Corporation  
 Naval Architect: Nigel Gee and Associates (BMT)  
 X-Craft Building Yard: Nichols Brothers Boat Builders  
 Office of Naval Research Public Affairs

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