



Sea Flyer is a unique hybrid lifting body ship that combines the high-speed capabilities of a hydrofoil and the rough-water stability of a small waterplane area twin hull (SWATH). A former Navy Surface Effects Ship SES-200 (IX-515), the vessel was converted in stages between 2000 and 2003 by Navatek, Ltd (a subsidiary of Pacific Marine and Supply, Ltd), with funding from the Office of Naval Research. Modifications included removing the existing air cushion system on the SES and all related components; installing a 170-ton underwater lifting body and a new propulsion system; adding an aft underwater cross foil and an advanced ride control system (ARCS) to control pitch and roll.



Sea Flyer

The lifting body allows the ship to operate with variable immersion as speed increases, with the hull completely out of the water's surface at maximum speed. In essence, the ship's hull is "flying" above the water while the lifting body, aft cross foil, and ARCS combine to provide lift and stability at high speed. This hybrid concept allows a larger payload than a SWATH, but with similar seakeeping capability. The lifting body on *Sea Flyer* also provides volume for propulsion machinery and contains two of the four control flaps for the ride control system. It is made of aluminum with composite materials used as side caps.

Sea Flyer was launched in June 2003, with Navy sea trials conducted in 2004. The current mission of *Sea Flyer* is to evaluate the sea-keeping and load-carrying capacity of a hybrid SWATH/hydrofoil ship incorporating an underwater lifting body and ride control system. During sea trials in 8- to 14-foot seas with 40-knot winds (Sea State 5), *Sea Flyer* was able to maintain an average cruising speed just one knot less than its calm water cruising speed. *Sea Flyer* also will be used to train the future crew of the Littoral Surface Craft-Experimental, also known as X-Craft, a high-speed catamaran currently under construction.

Sea Flyer is a Navy vessel (official designation: IX515) in possession of the Office of Naval Research. Navatek, a Hawaii-based company, signed a Cooperative Agreement with the Office of Naval Research in 2000 to design, reconstruct, test, and evaluate the vehicle. Navatek maintains operational control of *Sea Flyer* and has provided all operational crew to date.

Sea Flyer Specifications

Length: 167.4 ft
Beam: 43.0 ft
Draft: 18.5 ft
Displacement: 270 LT light; 340 LT full load
Maximum Speed: 30+ knots

