

Future Fast Frigate (3F)

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The United States Navy's (USN's) Long-Range Naval Vessel Construction Plan calls for its current and under construction Small Surface Combatant (SSC) ships to be replaced starting in 2030. Program Executive Office LCS has undergone significant recent design and operational achievements that should be considered while designing a follow-on frigate. Concurrently with the procurement of LCS hulls are the three current LCS Mission Packages: SUW, MCM and ASW, along with a worldwide array of mission package maintenance and staging facilities to support the rapid exchange of mission packages on board an LCS or modified-LCS. To support an economical evolution of a technologically and tactically superior frigate design, now is the time to explore the follow-on SSC or Fast Future Frigate (3F).

The design process for 3F was fundamentally the same as for modern combatants; however, the design team accepted the challenge of setting speed and displacement requirements before determining missions for 3F. Thus, several different techniques were explored due to preserve weight and space budgets during early design. The process included selecting the hullform with the least residual resistance and a propulsion concept that incorporates both low fuel consumption and high maintainability/survivability. The selected hullform and propulsion plant were then integrated into a clean sheet ship design using several design tools and methods guided by traditional "spiral" design techniques. An Analytical Hierarchical Priority approach was used to inform mission system configuration design. During detailed arrangement design, survivability and modularity were prioritized where feasible. The design was put through a series of structural and stability analyses along with various sea keeping scenarios to determine the 3F's sea worthiness and mission effectiveness.

The outcomes from this study verify that using the 3F as a basis for future SSC is a feasible solution. The results also demonstrate that the 3F can achieve at least the same missions as a modified-LCS with displacement comparable to a USN frigate.

Ship Characteristics	
Parameter	Value
LBP	124.1 meters
Beam	16.2 meters
Draft	4.7 meters
Depth (Station 10)	11.2 meters
Full Load Displacement (without margins)	4,295 metric tons
Full Load Displacement	4,985 metric tons
Trim	0.15°F
Range	4,970 nm
Sustained Speed	28 knots
Accommodations	98

