

Littoral Combat Ship (LCS)

Executive Summary

- The Navy restructured the Littoral Combat Ship (LCS) program to include two “Flight 0” ships (one of each seaframe design) and five “Flight 0+” ships (mix of seaframes under negotiation). The Navy’s long-term strategy is to acquire 55 LCS; however, no final decision has been made beyond these first seven platforms.
- The Navy accepted delivery of LCS 1 in September 2008. Delivery of LCS 2 has slipped to the second half of FY09.
- The Integrated Product Team completed the Test and Evaluation Master Plan (TEMP) and it is in the review process.



LCS 1

System

- The LCS is a new class of ship designed to operate in the shallow waters of the littorals where larger ships cannot maneuver as well. It can accommodate a variety of individual warfare systems (mission modules) assembled and integrated into interchangeable mission packages.
- There are two competing basic ship (seaframe) designs:
 - The Lockheed Martin design (LCS 1) is a steel monohull.
 - The General Dynamics design (LCS 2) is an aluminum tri-mararan style hull.
- The designs propose different combat systems for self-defense against anti-ship cruise missiles.
- Both designs use combined diesel and gas turbine engines with waterjet propulsors.
- More than a dozen individual programs of record, involving sensor and weapon systems and other off-board vehicles, have been chosen to make up the individual mission modules. All but three are Acquisition Category (ACAT) II and ACAT III programs.
- The Navy plans to acquire a total of 55 LCS, but the mix of platforms is undecided.



LCS 2

- Commanders can employ LCS in a maritime presence role regardless of the installed mission package based on capabilities inherent to the seaframe.
- The Navy can deploy LCS alone or in conjunction with other ships.

Mission

- The Maritime Component Commander can employ LCS to conduct Mine Warfare (MIW), Anti-Submarine Warfare (ASW), or Surface Warfare (SUW), based on the mission package fitted into the seaframe. Mission packages are designed to be interchangeable, allowing the Maritime Component Commander flexibility to reassign missions.

Prime Contractors

- LCS 1: Lockheed Martin
- LCS 2: Bath Iron Works
General Dynamics

Activity

- LCS 1 completed acceptance trials on August 22, 2008. The Navy’s Board of Inspection and Survey recommended that the Chief of Naval Operations accept delivery, provided that designated deficiencies were either corrected or waived.
- The Navy restructured the LCS program to include two Flight 0 ships (one of each seaframe design) and five Flight 0+ ships (mix of seaframes under negotiation). A Milestone

A-prime decision is expected to approve procurement and determine the mix of the five Flight 0+ ships.

- Although the Navy accepted delivery of LCS 1 in September 2008, LCS 2 has slipped to 3QFY09. Shipyard work will continue for several months after delivery.
- The Navy began IOT&E of the Organic Airborne Mine Countermeasures (OAMCM) variant of the MH-60S, which will deploy and operate Airborne Mine Countermeasure (AMCM) mission modules from LCS. These systems are part of the LCS Mine Countermeasures Mission Package. During the first operational test of the OAMCM MH-60S and the AN/AQS-20A towed sonar sensor, multiple problems associated with the deployment and retrieval of the AN/AQS-20A sensor caused the Program Office to de-certify the system, suspending the IOT&E pending investigation and remedial action.
- The Remote Mine-hunting System (RMS), another key element of the Mine Warfare Mission Package, conducted an operational assessment (OA) in September 2008 aboard USS *Bainbridge* (DDG 96). RMS IOT&E, originally scheduled for June 2007, has been postponed because of performance and reliability issues and may now occur in conjunction with LCS operational testing.
- Other mission systems in support of ASW and SUW modules are in various stages of developmental testing.
- The IOT&E strategy for the first of each of the two seaframes received concurrence from the Integrated Product Team and a final version of the TEMP is in coordination for approval. However, test planning beyond Flight 0+ is unfeasible until the Navy solidifies a future acquisition strategy.

Assessment

- The LCS program endures a great deal of uncertainty due to the unknown mix of future ships and organizational complexity related to monitoring mission module test and development in addition to component integration with both seaframes.
- The IOT&E strategy is constructed to allow operational testing of both LCS seaframes with each mission package. Under the strategy, all three mission packages will be tested as spiral developments on both seaframes, and ship self-defense testing is integrated into the Navy's Ship Self-Defense Test and Evaluation Enterprise effort.
- LCS is designed to have a small crew, and the operational concept relies heavily on shore-based support. Navy plans for this support are still maturing. Shore-based support will be assessed during IOT&E.

Recommendations

- Status of Previous Recommendations. The Navy satisfactorily addressed all but two of the previous eight recommendations. The remaining two recommendations merit additional emphasis.
- FY08 Recommendation.
 1. The Navy needs to solidify the LCS Acquisition Strategy to allow for realistic long-range planning. Program uncertainty has cascading effects on production and testing management.