

LHA 6 (formerly LHA(R)) - New Amphibious Assault Ship

Executive Summary

- As of early FY06, the Navy-approved Test and Evaluation Master Plan (TEMP) and LFT&E Management Plan for Milestone B (entry into System Development and Demonstration) are not satisfactory. The problem is an unacceptable alternative proposed in lieu of a Full Ship Shock Trial (FSST).
- The Navy conducted Operational Test-A (OT-A), an Early Operational Assessment (EOA), May through September 2005 in accordance with a DOT&E-approved test plan.
- EOA identified high effectiveness and suitability risk for the amphibious mission.

System

- The LHA 6 is a large-deck amphibious ship designed to support up to 28 MV-22 tilt rotor aircraft or 23 F-35 Joint Strike Fighter (Short Take-Off, Vertical Landing variant), all U.S. Marine Corps and Navy helicopters as well as several types of Army and Air Force helicopters.
- It does not have a well deck, which is traditionally used for amphibious operations.
- The combat system is the Ship Self Defense System. It uses the Rolling Airframe Missile weapon system, North Atlantic Treaty Organization Sea Sparrow Missile System with the Evolved Sea Sparrow Missile, and Close-In Weapon System for self-defense.
- Propulsion is by two marine gas turbine engines and two controllable pitch propellers. Diesel generators provide electric power.



Mission

The Joint Maritime Component Commander employs the LHA 6 as:

- The centerpiece ship of the Expeditionary Strike Group
- An afloat headquarters for Marine Expeditionary Unit, Amphibious Squadron, or other Joint Force commanders using its command, control, communications, computers, and intelligence facilities and equipment
- The primary Expeditionary Strike Group aviation platform, with space and accommodations for U.S. Marine Corps vehicles, cargo, ammunition, and more than 1,600 troops

Activity

- The Navy conducted an EOA as required prior to the Milestone B decision.
- Eight of nine survivability surrogate test events were completed with the last planned for execution in early 2006.
- Approval of an acceptable TEMP was moved to FY06 as a result of disagreement on the FSST.
- Milestone B is scheduled for early FY06, with production projected to begin in late 2007.

Assessment

- OT-A was adequate for the present state of development. LHA 6 is a follow-class to the LHD 1 class. Design specifications and general arrangement drawings were not complete, and much of the analysis was done using the transition ship LHD 8 documents modified with proposed changes for LHA 6.

- Analysis indicates that the ship's service life growth allowances will be greater than those of LHD 1 class ships. This growth allowance gives the Navy greater flexibility to install new or upgraded systems over the expected 40-year life of the ship with fewer concerns about the ship's total displacement or stability. The ship design provides increased aircraft carrying and supportability capacity over LHA 1 and LHD 1 class ships and addresses specific requirements of F-35 Short Take-Off, Vertical Landing, and MV-22 aircraft.
- Many new electrical, propulsion, and auxiliary equipment and designs are being incorporated for which little if any reliability, maintainability, availability, and survivability data are available. Most are being installed in LHD 8, though the Navy does not plan to conduct operational testing on that ship.
- LHA 6 will not contribute to overall surface connector (Air-Cushion Landing Craft and Displacement Utility Landing

Craft) capability of a three-ship Expeditionary Strike Group like the LHA 1 and LHD 1 class ships. Neither the Navy nor the Marine Corps has presented documented analysis to show how an Expeditionary Strike Group built around LHA 6 will carry out the primary mission of amphibious warfare without an additional well deck.

- As a modification of a legacy ship design, crew and troop habitability features do not compare favorably to other new ship designs and do not comply with current Navy habitability standards.
- The design does not display comparable potential in the context of expeditionary unit level (tactical level) of operations. The principle concern is that during unit level expeditionary operations that exceed the complexity and duration of an “amphibious raid,” LHA(R) is at risk of not being capable of supporting troops ashore. This risk is caused by the reduction of square footage for stowage of major end items including equipment (to include combat and service support vehicles) and supplies, and the limited ability to transport these items ashore. No formal analysis of throughput of major end items from LHA(R) to shore was available to support the OT-A. Specifically, the design studies presented did not adequately consider the “end-to-end” embarkation, debarkation, and back loading process required for LHA(R) to support its Amphibious Warfare mission.
- Analysis by the Navy using a low fidelity modeling and simulation tool (G-SHOCK) alone is not of sufficient fidelity to support foregoing a FSST. Because survivability was elevated to a key performance parameter in a recent change to the Capabilities Development Document, proving LHA 6 can meet Level II (moderate) survivability standards will require more rigorous testing and analysis than has been proposed in lieu of FSST.

- The TEMP includes estimates for the cost of anti-air warfare self defense testing (as directed by DOT&E), but actual funding is tied to the Anti-Air Warfare Self-Defense Test and Evaluation Enterprise Strategy document that is not yet approved by the Navy or DOT&E. The Navy presented separate correspondence expressing commitment to funding the enterprise-wide testing intent. DOT&E supports the Navy’s proposal. Until the enterprise-wide document is approved, operational testing of LHA 6 Anti-Air Warfare self-defense capability is not fully funded.

Recommendations

The Navy should:

1. Ensure adequate OT&E to assess how the amphibious warfare mission will be conducted from LHA 6. Consider revising current doctrinal publications to account for the unique capabilities and limitations of this design.
2. Conduct detailed analyses of studies that include modeling and simulation efforts to better understand what design adjustments or doctrinal changes should be made to LHA 6 to appropriately accommodate Marine Expeditionary Unit-level amphibious operations. These analyses should also be applied to more clearly define cargo, vehicle, and passenger flow routes throughout the ship to support troop embarkation, debarkation, backload, and weapons safety.
3. Maximize observations of LHD 8 to collect suitability data on new electrical, propulsion, and auxiliary equipment that will be common to LHA 6.
4. Change the TEMP and/or LFT&E management plan to provide a technically sound alternative to the FSST or retain the funded FSST option in the event analysis does not produce an acceptable option.