

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

Executive Summary

- Preliminary results from Commander, Operational Test and Evaluation Force's (COTF) operational assessment (OT-B1) indicates that the ship will likely meet aircraft land/launch requirements and amphibious lift capacities requirements for aircraft, vehicle, and cargo, and will better support future aircraft mixes.
- The Navy has not provided analyses to address concerns from an Early Operational Assessment conducted in FY05 that indicated the removal of the well deck, the reduction in vehicle stowage, and the decrease in medical facilities will compromise LHA 6's capability to execute Expeditionary Strike Group (ESG) and Marine Expeditionary Unit (MEU) missions. It is critical to resolve these concerns through analysis before contracting for additional ships with this design.
- Adequate IOT&E of the LHA 6 combat system self-defense capability against anti-ship cruise missiles and small boat attacks will require threat-representative targets, means for real-time evaluation of gun engagements, as well as installation of an AN/SPS-48 radar on the Self-Defense Test Ship (SDTS).
- LFT&E analysis completed to date identified potential problems in the susceptibility and vulnerability of the LHA 6 primary mission areas.

System

LHA 6 is a large-deck amphibious ship designed to support a notional mix of 12 MV-22s, six F-35B Joint Strike Fighters (Short Take-Off, Vertical Landing variant), four CH-53Es, seven AH-1s/UH-1s, and two embarked H-60 Search and Rescue (SAR) aircraft, or an F-35B load-out of 20 aircraft and two H-60 SAR aircraft.

- It does not have a well deck, which is traditionally used for amphibious operations. Instead, the space will allow for greater aviation stores capacity and an increase in the size of the hangar bay to accommodate two MV-22 high-hat areas for maintenance. Shipboard medical spaces were reduced by approximately two-thirds compared to contemporary LHDs to expand the hangar bay.
- Hangar facilities will better accommodate MV-22s and F-35Bs, in addition to all Navy and Marine Corps helicopters.
- The combat system includes the Ship Self-Defense System (SSDS) Mk 2 and the Close-In Weapon System Block 1B for defense against air threats and small surface craft. The SSDS Mk 2 integrates the AN/SPS-48E long-range air search radar, AN/SPQ-9B horizon search radar, Cooperative Engagement Capability, Rolling Airframe Missiles, Evolved SeaSparrow Missiles, and AN/SLQ-32B(V)2 electronic warfare systems



with Mk 53 NULKA electronic decoys into a single command and control system for both hard and soft kill.

- Propulsion is provided by two marine gas turbine engines, two electric auxiliary propulsion motors, and two controllable pitch propellers. Six diesel generators provide electric power.
- Command, control, communications, computers, and intelligence (C4I) facilities and equipment to support Marine Corps Landing Force operations are part of the program of record.

Mission

The Joint Maritime Component Commander will employ LHA 6 to:

- Act as the centerpiece ship of an ESG; it will be the primary aviation platform, with space and accommodations for Marine Corps vehicles, cargo, ammunition, and more than 1,600 troops
- Serve as an afloat headquarters for a MEU, Amphibious Squadron, or other Joint Force commands using its C4I facilities and equipment
- Accommodate elements of a Marine Expeditionary Brigade when part of a larger amphibious task force
- Participate in aerial assaults by embarked Marine Corps aircraft
- Carry and discharge combat service support elements and cargo to sustain the landing force
- Conduct non-combatant evacuation operations (NEO) and other crisis response missions such as humanitarian assistance/disaster relief (HA/DR)

Prime Contractor

- Northrop Grumman

Activity

- The Navy conducted an operational assessment (OT-B1) per the DOT&E-approved Test and Evaluation Master Plan. Experienced fleet operators (Navy and Marine Corps) reviewed ship plans and specifications, data on fielded systems, and previous testing conducted on systems that will be installed on LHA 6.
- The Navy conducted a variety of LFT&E test and analyses using surrogate ship platforms or scale models to develop an understanding of vulnerabilities of LHA 6 design against typical weapons effects. The largest test used the ex-*Saipan* (LHA 2) and measured the ships response to underwater explosions with the intent to improve the Navy's ability to build computer-based models to predict the LHA 6 response.

Assessment

The final report for the operational assessment (OT-B1) is not expected until early FY09, but preliminary results indicate the following:

- The Navy has not adequately addressed findings and recommendations from the FY05 Early Operational Assessment.
- The ship provides required increases in aircraft carrying capacity, fuel/cargo capacity, and hangar/maintenance spaces; however, the lack of a surface connector capability limits the ship to carrying only small vehicles and cargo adequate for air transport and will have implications on the ESG as a whole to provide sufficient vehicle stowage to meet MEU lift requirements.
- Experienced fleet operators concluded that air department manning is insufficient to support the surge flight deck requirement to simultaneously operate six aircraft landing areas, 24 hours per day, for six consecutive days.
- Compared to current LHA and LHD-class ships, LHA 6 provides substantially reduced medical capabilities. No other ship in an ESG has the medical capacity to offset this reduction.
- Chemical, biological, radiological, and nuclear weapon survivability is compromised because the ship's Collective Protection System (CPS) is not designed to protect critical operational and medical spaces.
- Elimination of two of the four NULKA launchers to better accommodate MV-22 and F-35B operations and the decision to use a passive vice active electronic attack (EA) system found on legacy LHAs and LHDs increases risk in the capability to defend against anti-ship cruise missile attacks.
- Adequate operational testing of the combat system self-defense capability against anti-ship cruise missiles will require the Navy to install an AN/SPS-48 radar on the SDTS, and acquire threat missile surrogates (GQM-163A Coyote) modified to represent a high-diving anti-radiation missile.
- Testing the ship's capability to defend against a coordinated small boat attack will be hindered because there is no capability for real-time evaluation of weapons systems effectiveness during engagements.

- Locations of proposed cargo and weapon elevators and design of internal ramps make them single points of failure in loading and unloading of the ship during amphibious operations.
- Compared to current MEU aircraft, MV-22 and F-35B operations are expected to greatly increase noise and heat levels on and below the flight deck. Joint Strike Fighter (F-35B) compatibility is an area of risk that requires continued attention to ensure that essential engineering changes are incorporated before the start of IOT&E.
- The ship is built to the legacy LHD 1-class habitability standards rather than the improved 1996 standards.
- The LFT&E program is robust and designed to provide data to support a comprehensive evaluation of the survivability of the LHA 6 class of ships using surrogate testing, damage-based scenario engineering analysis, modeling and simulation, and Total Ship Survivability Trials in time to support completion of operational testing currently scheduled for FY14.

Recommendations

- Status of Previous Recommendations. The Navy still needs to address two previous recommendations: one of the four from FY05 and one of the two from FY06. There were no FY07 recommendations.
- FY08 Recommendations. The Navy should:
 1. Conduct analyses that fully consider the end-to-end embarkation, debarkation, and back loading process. The principal concern remains whether and how ESG operating concepts can be revised to adequately compensate for the LHA 6's lack of a surface connector capability and reduced lift capability.
 2. The ship's manning concept should also be reviewed with respect to the surge aviation operations requirement and the ability of the air department to simultaneously support six aircraft landing areas, 24 hours per day, for six consecutive days.
 3. Conduct a detailed analysis of whether the ship's reduced medical capabilities will be sufficient to support contemporary and future ESG/MEU missions to include HA/DR missions.
 4. Continue to study what effects F-35Bs and MV-22s – particularly aircraft exhaust/noise and required logistic support – will have on the ship and make appropriate adjustments to the design.
 5. Reexamine the decision to reduce the ship's electronic decoy capability to only two NULKA launchers.
 6. Install an AN/SPS-48 radar on the SDTS for the IOT&E and provide resources to procure enough targets (including backups) for IOT&E.
 7. Develop a capability to provide real-time feedback on weapon system effectiveness against small boat attacks for use during both testing and training.