

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

Executive Summary

- In FY18, the Navy completed the ship self-defense portion of IOT&E. LHA 6 deployed in July 2017 with a Marine Expeditionary Unit (MEU) Aviation Combat Element (ACE) that includes AV-8B Harrier aircraft. The Navy will not complete the operational evaluation of the ship's ability to support a complement of 20 F-35B aircraft until FY21.
- DOT&E will publish an IOT&E report in early 2QFY19 detailing findings of the LHA 6 operational effectiveness, suitability, and survivability.
- LHA 6 is effective for mobility and seaworthiness.
- Operational testing demonstrated that LHA 6 is effective at supporting some Marine Corps missions, but testing was not adequate to demonstrate the ship's effectiveness at supporting the full Marine Corps range of operations at an operationally realistic tempo.
- LHA 6 is suitable for mobility and amphibious warfare.
- LHA 6 cybersecurity testing identified deficiencies.
- Detailed results of ship self-defense testing, cybersecurity testing, and survivability can be found in the classified DOT&E LHA 6 IOT&E report.

System

- LHA 6 is the lead ship of this new class of large-deck amphibious assault ships designed to support a notional mix of MEU ACE fixed- and rotary-wing aircraft consisting of 12 MV-22 Ospreys, 6 F-35B (Short Take-Off/Vertical Landing (STOVL) variant), 4 CH-53Es, 7 AH-1s/UH-1s, and 2 Navy MH-60 Search and Rescue aircraft, or an alternate loadout of 20 F-35Bs and 2 MH-60 Search and Rescue aircraft. Key ship features and systems include the following:
 - A greater aviation storage capacity and an increase in the size of the hangar bay to accommodate the enhanced aviation maintenance requirements for the MEU ACE with embarked F-35B and MV-22. Additionally, two maintenance areas with high-overhead clearance have been incorporated in the hangar bay to accommodate maintenance on MV-22s in the spread configuration (wing spread, nacelles vertical, and rotors spread).
 - The ship does not have a well deck. Aviation assets must be used to transfer personnel and equipment to and from the beach.
 - Shipboard medical spaces were reduced in size by approximately two thirds compared to contemporary LHDs to accommodate the expanded hangar bay.
- The LHA 6 combat system used for defense against air threats and small surface threat craft includes the following major components:
 - The Ship Self-Defense System (SSDS) MK 2 Mod 4B supporting the integration and control of most other combat system elements
 - The AN/SPS-48E and AN/SPS-49A air search radars and the AN/SPQ-9B horizon search radar
 - USG-2 Cooperative Engagement Capability (CEC) real-time sensor netting system
 - The Rolling Airframe Missile (RAM) and the Evolved Seasparrow Missile (ESSM), with the NATO Seasparrow MK 9 Track Illuminators
 - The AN/SLQ-32B(V)2 with the Surface Electronic Warfare Improvement Program Block 1 (SEWIP Block 1) with the Nulka electronic decoy-equipped MK 53 Decoy Launching System
 - The Phalanx Close-In Weapon System Block 1B and the MK 38 Mod 2 Gun Weapon System
- Two marine gas turbine engines, two electric auxiliary propulsion motors, and two controllable pitch propellers provide propulsion. Six ship service diesel generators provide electric power.
- Command, control, communications, computers, and intelligence (C4I) facilities and equipment support Marine Corps Landing Force operations. The Navy is currently installing the Consolidated Afloat Networks and Enterprise Services (CANES) on the LHA 6, and the LHA 7 design and beyond will deploy with CANES incorporated.
- To reduce vulnerability and enhance recoverability following threat impact, the ship has the following survivability features:
 - Improved ballistic protection for magazines and other vital spaces as well as the inclusion of some shock hardened systems and components
 - Various installed and portable damage control, firefighting, and dewatering systems
- The Navy classifies both LHA 6 and LHA 7 as LHA Flight 0 ships. The Navy will introduce a Flight 1 variant of the LHA(R) program with the third ship, LHA 8. It will gain a well deck for deploying surface connectors to move troops and



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equipment ashore, a modified flight deck, and smaller island intended to enable an aviation support capability similar to LHA 6.

Mission

The Joint Maritime Component Commander will employ LHA 6 to:

- Serve as the primary aviation platform within an Amphibious Ready Group providing space and accommodations for Marine Corps vehicles, cargo, ammunition, and more than 1,600 troops
- Serve as an afloat headquarters for an MEU, Amphibious Squadron, or other Joint Force commands using its C4I facilities and equipment to provide mission support
- Accommodate elements of a Marine Expeditionary Brigade when part of a larger amphibious task force
- Carry and discharge combat service support elements and cargo to sustain the landing force

Activity

- The Navy Operational Test and Evaluation Force (OPTEVFOR) completed the ship self-defense Probability of Raid Annihilation (PRA) Modeling and Simulation (M&S) test bed phase of IOT&E in January 2018 in accordance with a DOT&E-approved test plan.
- LHA 6 deployed in July 2017. The Navy will not complete the operational evaluation of the ship's ability to support a complement of 20 F35-B JSF aircraft until 2021.
- The Navy did not conduct the Advanced Mine Simulation System (AMISS) trial to characterize the susceptibility of the LHA 6 to mines, as agreed to in the DOT&E-approved Test and Evaluation Master Plan (TEMP) Revision A. Because this test was not conducted, the evaluation of mine susceptibility is limited.
- The Navy is developing a revision to the LHA(R) TEMP (Revision B) to address near-term developmental testing and follow-on test and evaluation events, to include the LHA 8 Operational Assessment and LHA Flight 0 F-35 FOT&E. Once Revision B is approved, the Navy intends to commence development of TEMP Revision C to support detailed planning for the operational test (including cybersecurity) and LFT&E of LHA Flight 1.

Assessment

- LHA 6 is effective for mobility and seaworthiness.
- Operational testing demonstrated that LHA 6 is effective at supporting some Marine Corps missions, but testing was not adequate to demonstrate effectiveness at supporting the full

Major Contractors

- LHA 6: Huntington Ingalls Industries, Ingalls Shipbuilding Division – Pascagoula, Mississippi
- SSDS: Raytheon – San Diego, California
- RAM: Raytheon – Tucson, Arizona, and RAMSys – Ottobrunn, Germany
- ESSM: Raytheon – Tucson, Arizona
- CEC: Raytheon – St. Petersburg, Florida
- SEWIP Block 1: General Dynamics Advanced Information Systems – Fair Lakes, Virginia

Marine Corps range of operations. LHA 6 can support Marine Corps amphibious warfare mission tasks: load and unload cargo and vehicles from aircraft, launch and recover aircraft, and muster and load marines. However, the movement of marines, cargo, and vehicles executed during testing was insufficient to generate a realistic operational tempo required by the Operational Test Agencies for an adequate operational test. If the Navy and Marine Corps desire to combine pre-deployment exercises with IOT&E for future amphibious ship programs, this shortcoming must be mitigated.

- LHA 6 is suitable for mobility and amphibious warfare.
- LHA 6 cybersecurity testing identified deficiencies.
- Detailed results of ship self-defense testing, cybersecurity testing, and survivability can be found in the classified DOT&E IOT&E report.

Recommendations

The Navy should:

1. Not repeat the LHA 6 Amphibious Warfare (AMW) IOT&E execution. For future amphibious ship test programs in which the Navy desires to combine IOT&E with fleet pre-deployment exercises, organize a subset of days in which the Operational Test Agencies have control over mission planning, mission execution, and data collection to ensure execution of an adequate AMW IOT&E.
2. Program and resource an AMISS trial in the LHA(R) TEMP Revision B.