

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

Executive Summary

- LHA 6 completed a 10-month Post Shakedown Availability (PSA) on March 25, 2016. The Navy implemented the changes necessary to incorporate the Joint Strike Fighter (JSF) and the MV-22 Osprey on LHA 6 and will include these changes into the LHA 7 construction plan. LHA 6 will conduct her maiden deployment in mid-2017 with a standard Marine Expeditionary Unit (MEU) Aviation Combat Element (ACE) that includes AV-8B Harrier aircraft. LHA 6 will not complete her operational evaluation of the ship's ability to support a complement of 20 JSF aircraft until FY19.
- The Navy conducted the first part of LHA 6 IOT&E phase OT-C5, which assesses the cybersecurity of the LHA 6. The Cooperative Vulnerability and Penetration Assessment (CVPA) was executed from August 15 – 29, 2016, with the Adversarial Assessment (AA) planned for February 2017. The Navy's Commander, Operational Test and Evaluation Force (COTF) conducted testing on 6 of 128 systems due to limited tester availability, and reported that Hull, Mechanical, and Electrical (HM&E) systems and the Navigation Sensor System Interface (NAVSSI) cannot be tested due to safety concerns.
- The Navy and Marine Corps Operational Test Agencies developed a plan to complete LHA 6 IOT&E phase OT-C4 – the amphibious warfare (AMW) phase – in conjunction with scheduled pre-deployment fleet exercises. The Navy's Program Office is also coordinating with fleet and Marine Corps leadership to conduct the Total Ship Survivability Trial (TSST) in conjunction with these fleet exercises.
- After the PSA, the Navy recommenced LHA 6 IOT&E with the OT-C2 test phase, which was conducted during the Rim of the Pacific multi-national exercise. No Critical Operational Issues were resolved during this phase of test, which was conducted to only provide supplemental data and to inform the Operational Test Agencies as they develop their methodology to execute OT&E in conjunction with the formal certifying fleet exercises in 2QFY17.
- LHA 6 IOT&E phase OT-C3, planned for January 2017, will include tests of the gun systems against the small boat raid and low slow flyer and a demonstration of the chemical warfare detection, protection, and recovery system.
- LHA 6 IOT&E phase OT-C4 will be conducted in April through June 2017. The test will serve as the assessment of the AMW mission areas and be performed in conjunction with the Amphibious Squadron (PHIBRON)/MEU Integration exercise (PMINT), Composite Training Unit Exercise, and conclude with the final Certifying Exercise. Integration of test needs, goals, and requirements is essential from the earliest stage (i.e., the PMINT initial planning conference).



System

- LHA 6 is the lead ship of this new class of large-deck amphibious assault ships designed to support a notional mix of fixed- and rotary-wing aircraft consisting of 12 MV-22 Ospreys, 6 F-35B JSFs (Short Take Off/Vertical Landing variant), 4 CH-53Es, 7 AH 1s/ UH 1s, and 2 embarked H-60 Search and Rescue aircraft, or a load out of 20 F-35Bs and 2 embarked H-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 is required to accommodate the enhanced aviation maintenance requirements for the MEU ACE with F-35B and MV-22. Additionally, two maintenance areas with high-overhead clearance have been incorporated in the hangar 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. All personnel and equipment transfer to the beach must be done by aviation units.
 - Shipboard medical spaces were reduced by approximately two thirds compared to contemporary LHDs to accommodate the expanded hangar bay.
- The LHA 6 combat system for defense against air threats and small surface 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 ship's AN/SPS-48E and AN/SPS-49A air search radars and the AN/SPQ-9B horizon search radar
 - USG-2 Cooperative Engagement Capability real-time sensor netting system

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- The Rolling Airframe Missile and the Evolved Seasparrow Missile (ESSM), with the NATO Seasparrow MK 9 Track Illuminators
- The AN/SLQ-32B(V)2 electronic warfare system 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 diesel generators provide electric power.
- Command, control, communications, computers, and intelligence (C4I) facilities and equipment support Marine Corps Landing Force operations. The Navy will not install the Consolidated Afloat Networks and Enterprise Services (CANES) on the LHA 6 before FY22, but the LHA 7 design and beyond will deploy with CANES incorporated.
- In addition to the self-defense features discussed above, 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/components intended to enhance survivability.
 - Various installed and portable damage control, firefighting, and dewatering systems intended to support recoverability from peacetime shipboard fire and flooding casualties and from battle damage incurred during combat.
- The Navy will introduce a Flight 1 variant of the LHA(R) program with the third ship, LHA 8. It will have a well deck for deploying surface connectors to move troops and equipment ashore, a modified flight deck, and reduced island intended to enable an aviation support capability similar to that of LHA 6.

Mission

The Joint Maritime Component Commander will employ LHA 6 to:

- Serve as the primary aviation platform within an Amphibious Ready Group with 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
- 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

Major Contractor

Huntington Ingalls Industries, Ingalls Shipbuilding Division – Pascagoula, Mississippi

Activity

- LHA 6 completed her PSA on March 25, 2016. The 10-month long PSA, held from May 2015 until March 2016, prevented any significant testing through the availability. The principal tasks accomplished during PSA were the design modifications to the flight deck to account for the deck strengthening, heat-resistant material improvements, and lighting positioning to accommodate the JSF F-35B and benefit MV-22 Osprey operations. The flight deck changes have been included in the LHA 7 design currently under construction at Huntington Ingalls shipyard.
- Since completing her PSA, the Navy recommenced LHA 6 IOT&E with the OT-C2 test event, conducted from June 29 through August 3, 2016. The test was conducted during the Rim of the Pacific multi-national exercise. No Critical Operational Issues were resolved during this phase of test. The exercise was conducted to provide supplemental data and to develop a methodology on how best to accomplish testing in conjunction with the formal certifying fleet exercises to be conducted in 2QFY17.
- The Navy conducted the LHA 6 cybersecurity testing CVPA from August 15 – 29, 2016, and the AA is planned for February 2017. COTF conducted testing on 6 of 128 systems, but did not perform testing on HM&E systems due to safety concerns. The Navy did not permit any hands-on manipulation of HM&E or NAVSSI systems; the Navy plans to construct a stand-alone laboratory environment to conduct testing of such shipboard systems in high fidelity representative test environments without the risk of corrupting them..
- The Navy is developing an LHA(R) Test and Evaluation Master Plan (TEMP) Revision B to address design modifications to LHA 8, including the addition of the well deck and changes to the flight deck, the island configuration, the combat system, medical spaces, fuel tanks, and supporting spaces. Evolutions of Marine Corps aircraft, surface connectors, and vehicles will also be considered.
- The Navy has stated it is not planning to execute the Advanced Mine Simulation System (AMISS) trial, which would be used to establish the mine susceptibility of the LHA 6, as agreed to in the DOT&E-approved TEMP Revision A. To date, the Navy has not presented a valid alternative to conducting the AMISS trial.

Assessment

- Because LHA 6 does not have a well-deck, it will rely exclusively on air assets to move forces ashore. The Navy and Marine Corps are in the process of adjusting their tactics to be consistent with the capabilities of LHA 6. In particular, the aircraft mix and equipment load-out used on an LHD with a well deck is unlikely to enable combat power to be massed

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- rapidly ashore from LHA 6. The Navy and Marine Corps to date have not finalized the tactics that will be required for IOT&E.
- The LHA 6 TSST, which contributes to the survivability assessment of the ship, was planned to occur during the AMW event consistent with execution of an efficient test program. The Navy has rescheduled the test to occur before the LHA 6 pre-deployment exercises in March/April 2017 to ensure the presence of an operationally representative load-out aboard the ship during the TSST. The Navy has coordinated with the fleet and Marine Corps leadership to ensure the TSST is conducted in an operationally realistic manner.
 - Results of testing completed to date continue to indicate that LHA 6 has some ship self-defense capability against older ASCM threats. LHA 6 ship self-defense performance against newer ASCM threats remains undetermined pending completion of the Probability of Raid Annihilation modeling and simulation test bed tests for IOT&E in late 2017.
 - The Navy initiated the Fire Control Loop Improvement program (FCLIP) to correct some combat system deficiencies related to self-defense against ASCMs and has the potential to mitigate some of the vulnerabilities.
 - The Navy has completed Phase 1 of the FCLIP. What was formally known as FCLIP Phase 2 and 3 are now merged into FCLIP Phase 2, which is not funded. Absent full funding of FCLIP, significant deficiencies will remain in the ability of the ship to defend itself against threats proliferating worldwide.
 - DOT&E does not agree that the Navy's proposed modeling and simulation-based approach to assessing the mine susceptibility of LHA 6 is adequate. The Navy should plan to execute the AMISS trial as agreed to in the DOT&E-approved TEMP Revision A.

Recommendations

- Status of Previous Recommendations. The Navy:
 1. Has not fully resolved the recommendation to correct systems engineering deficiencies related to SSDS MK 2-based combat systems and other combat system deficiencies so that LHA 6 can satisfy its Probability of Raid Annihilation requirement.
 2. Has not yet resolved the MK 29 launcher system motor failures due to the additional weight of the ESSM.
 3. In conjunction with the Marine Corps, finalize the tactics, techniques, and procedures for LHA 6 prior to the phase of IOT&E in which they will be used.
 4. Has neither planned nor resourced the mine susceptibility trial for the LHA 6 using the AMISS.
- FY16 Recommendations. The Navy should:
 1. Conduct cybersecurity testing of HM&E and Navigation systems, which was deferred due to safety concerns, in a laboratory to understand the systems' vulnerabilities.
 2. Fully fund and execute all phases of the FCLIP.
 3. Execute the AMISS trial as agreed in TEMP Revision A.

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