

## LPD-17 *San Antonio* Class Amphibious Transport Dock

### Executive Summary

- The Navy demonstrated the efficacy of LPD-17's collective protection system, its countermeasure wash-down system, and the crew's ability to decontaminate the ship's equipment, personnel, and spaces, and to conduct amphibious operations in chemical protective suits during FOT&E in February 2012.
- The Navy conducted FOT&E in August 2012 to examine the reliability of systems during the first five hours of an amphibious assault. Testing was not sufficient to demonstrate that the ship class satisfies its requirements.
- The Navy is working to correct deficiencies identified during IOT&E that led DOT&E to assess the ship not operationally effective, not operationally suitable, and not survivable in a hostile environment. However, correction of a number of these deficiencies has not yet been verified by follow-on operational testing.
- The Navy's Board of Inspection and Survey (INSURV) assessed the material condition of LPD-17, LPD-22, and LPD-23 as satisfactory.

### System

- LPD-17 is a diesel engine-powered ship designed to embark, transport, and deploy ground troops and equipment. Ship-to-shore movement is provided by Landing Craft Air Cushion (LCAC), Landing Craft Utility (LCU), Amphibious Assault Vehicles (AAVs), MV-22 tiltrotor aircraft, and/or helicopters. Key ship features and systems include the following:
  - A floodable well deck for LCAC, LCU, and AAV operations
  - A flight deck and hangar to support Navy and Marine Corps aircraft and helicopters
  - Command, Control, Communications, Computers, and Intelligence facilities and equipment to support Marine Corps Landing Force operations
  - Self defense against anti-ship cruise missile capability provided by the Ship Self-Defense System (SSDS) Mk 2-based combat system, which includes the Cooperative Engagement Capability radar tracking system and data distribution system, the Rolling Airframe Missile point defense system, the SLQ-32B (V)2 (with Mk 53 Decoy Launching System with Nulka electronic decoys) passive electronic warfare system, and radars (SPQ-9B horizon search radar and SPS-48E long-range air search radar)



- Two Mk 46 30 mm gun systems and smaller caliber weapons (e.g., Mk 2 .50-caliber machine guns) to provide the ship's self-defense against small surface threats
- A Shipboard Wide Area Network that serves as the data backbone for most of the ship's computer systems (LPD-17 is one of the first ships built with a fully integrated data network system).
- Design features that reduce the ship's radar cross section and are intended to make the ship less susceptible to attack

### Mission

- A Fleet Commander will employ LPD-17 class ships as part of a notional, three-ship Amphibious Ready Group or independently to conduct Amphibious Warfare.
- The Commanding Officer will use these ships to:
  - Transport combat and support elements of a Marine Expeditionary Unit or Brigade
  - Embark, launch, and recover LCACs, LCUs, and AAVs for amphibious assault missions
  - Support aerial assaults by embarking, launching, and recovering Marine Corps aircraft
  - Carry and discharge cargo to sustain the landing force
  - Conduct non-combatant evacuation operations and other crisis response missions

### Major Contractor

Huntington Ingalls Industries – Pascagoula, Mississippi

## Activity

- The Navy completed FOT&E designed to demonstrate capability to conduct operations in a chemical warfare environment (onboard LPD-21) in February 2012.
- The Navy conducted limited reliability FOT&E on ship systems during the first five hours of an amphibious assault (onboard LPD-20) in August 2012.
- The Navy's INSURV assessed the material condition of LPD-17, LPD-22, and LPD-23 as satisfactory during Acceptance Trials.
- The Navy, using the Probability of Raid Annihilation Test Bed Modeling and Simulation tool, commenced a modeling and simulation study to determine if upgrades and corrections to the ship's combat system improve the ship's capability to defeat raids of anti-ship cruise missiles.
- The Navy provided its final survivability assessment identifying 99 deficiencies to DOT&E in FY12 and commenced corrective actions. However, the Navy has not submitted the shock deficiency correction plan nor demonstrated the effectiveness of corrective actions taken to date.

## Assessment

- The Navy demonstrated the efficacy of LPD-17's collective protection system, its countermeasure wash-down system, and its crew's ability to decontaminate the ship's equipment, personnel, and spaces, and to conduct amphibious operations in chemical protective suits during FOT&E.
- The Navy has made progress in improving reliability and availability of critical ship systems affecting communications and propulsion based on results from INSURV and limited reliability testing onboard LPD-20. However, reliability and availability of the ship's critical systems require further improvements to assure the ship is both operationally effective and survivable.
- Since IOT&E, the Navy has not conducted any operational testing to demonstrate improvements to LPD-17's capability to defend itself against the threats it is likely to encounter to permit a reassessment of that capability. However, operational testing on other SSDS Mk 2 platforms has revealed similar combat system deficiencies to those found during LPD-17's IOT&E, confirming these issues are not LPD-17 specific. DOT&E's classified report to Congress in November 2012 titled "Ship Self-Defense Operational Mission Capability Assessment Report," provides details. The Navy is conducting a study of Probability of Raid Annihilation against anti-ship cruise missiles and expects to provide their report in the spring of 2013.
- Although improvements have been made, the Navy has not yet demonstrated the fully effective Command, Control, Communications, Computers, and Intelligence capabilities needed to support LPD-17 when performing

amphibious assault operations. The Joint Staff issued the Joint Interoperability Certification (with conditions) on October 26, 2012, but the Navy still needs to successfully test the Advanced Field Artillery Tactical Data System onboard LPD-17.

## Recommendations

- Status of Previous Recommendations. The Navy has satisfied recommendations relating to interoperability testing with AV-8B aircraft; completion of chemical, biological, and radiological defense testing; review of past INSURV inspections; initiation of the Probability of Raid Annihilation modeling and simulation effort; and improving the performance of the SPS-48E in the Advanced Enclosed Mast Structure. The Navy should act on the remaining 10 recommendations, which are listed below.

### FY08

1. Test fixes to critical systems including the Shipboard Wide Area Network and review the effect of ship's manning, training, and logistics support on the reliability and maintainability of ship systems.

### FY09

2. Address and test fixes to reliability problems with amphibious support equipment and propulsion equipment during FOT&E.
3. Continue to pursue mitigations to address integration problems with self defense in multiple warfare areas.
4. Conduct FOT&E in order to demonstrate improvements to performance problems related to the Advanced Enclosed Mast Structure (verify installation of the shroud on the SPS-48E radar corrects performance problems).

### FY10

5. Improve reliability of critical systems including gun systems, Magnetic Signature Control System, and effectiveness of SSDS Mk 2-based combat system.
6. Measure Total Ship Operational Availability over an extended period after completing reliability improvements.

### FY11

7. Correct remaining deficiencies from Shock Trial Reports.
  8. Complete FOT&E to test Information Assurance.
  9. Conduct FOT&E using the Advanced Mine Simulation System to determine vulnerability of LPD-17 to enemy mines.
  10. Incorporate outstanding test events as FOT&E into the LPD-17 Test and Evaluation Master Plan.
- FY12 Recommendations. The Navy should:
    1. Develop an FOT&E test plan for adequate, rigorous testing of the critical ship systems that must perform reliably to assure LPD-17 is operationally effective and survivable.
    2. Complete and disseminate the Probability of Raid Annihilation study.