

LPD 17 *San Antonio* Class Amphibious Transport Dock

Executive Summary

- The Navy postponed LPD 17's IOT&E because of deficiencies in the ship's material condition identified by the Navy's Board of Inspection and Survey. IOT&E is scheduled to commence in early FY08.
- Post-Delivery Tests and Trials (PDT&T) identified significant interoperability problems with the AN/SPS-48E radar enclosed in the Advanced Enclosed Mast Structure (AEM/S).
- Confirmation of self-defense capability against Anti-Ship Cruise Missiles (ASCM) requires an adequate number of high-diver surrogates.

System

The LPD 17 class ship is a diesel engine powered ship designed to embark, transport, and deploy ground troops and equipment. The troops and equipment move ashore by way of Landing Craft Air-Cushion (LCAC), by displacement Landing Craft Utility (LCU), by helicopter, or by MV-22 tiltrotor aircraft.

- The LPD 17 has a floodable well deck for LCACs.
- Flight deck and hangar facilities accommodate Navy and Marine Corps helicopters and the MV-22 aircraft.
- For self-defense against ASCMs, the Ship Self-Defense System Mark 2 (with Cooperative Engagement Capability) is the combat system that integrates weapons (Rolling Airframe Missiles and MK 53 NULKA electronic decoys) and radars (AN/SPQ-9B short-range radar and AN/SPS-48E long-range radar). Radars are housed in radomes to reduce detection of the ship by enemy radars.
- Two Mk 46 (30 mm) gun systems and smaller caliber machine guns defend against small surface threats.
- Command and Control facilities and equipment to support Marine Corps Landing Force operations are part of the program of record.



Mission

The Expeditionary Strike Group Commander employs LPD 17 class ships to conduct amphibious warfare. The Commander will use the ship to:

- Accommodate combat and support elements of a Marine Expeditionary Unit or Brigade
- Embark, discharge, and recover LCACs, LCUs, amphibious assault vehicles, and expeditionary fighting vehicles for seaborne assault missions
- Participate in aerial assault by embarking Marine Corps aircraft
- Carry and discharge combat service support elements and cargo to sustain the landing force
- Support non-combatant evacuation operations
- Be loaded and configured to conduct various crisis response missions such as humanitarian assistance

Activity

- Using representative landing force communications personnel, the Program Office (PMS-317) conducted a developmental test event in January and February 2007 to assess the ship's capability to integrate and support Marine Corps Command, Control, Communications, Computers, and Intelligence (C4I) systems. A similar event is planned for early FY08.
- The Navy's Board of Inspection and Survey attempted to conduct LPD 17's Final Contract Trials (FCT) in March 2007. The FCT transitioned to an unsuccessful trial status when the ship was unable to achieve minimum acceptable equipment for underway operation. The FCT has been rescheduled for October 2007.
- Testing of LPD 17's combat system onboard the Self-Defense Test Ship (SDTS) was not completed. Target issues delayed testing, underscoring longstanding difficulties in acquiring and presenting targets that are representative of challenging ASCM threats. The SDTS-based events are now scheduled to be completed in FY08.
- Commander, Operational Test and Evaluation Force (COMOPTEVFOR) began the first phase of LPD 17 IOT&E in February 2007. To reduce test costs, this phase was conducted in tandem with a Ship Self-Defense System Mark 2 Follow-On Test and Evaluation event. Neither scheduled missile firing event was conducted because of weather

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restrictions on the targets. This phase is rescheduled for November 2007.

- The Amphibious Warfare phase of the IOT&E was scheduled to start in July 2007. However, the Navy's Board of Inspection and Survey identified deficiencies in the ship's material completeness during the ship's (incomplete) Final Contract Trials. As a result, the ship's 10-week Post-Shakedown Availability maintenance period was extended an additional five weeks and the Final Contract Trials were rescheduled. The Marine Corps unit tasked with supporting the Amphibious Warfare phase was unable to accommodate these delays because of other operational commitments. Since a replacement unit will not be available until February 2008, the amphibious phase has been postponed until then.
- A third IOT&E phase, also focused on combat systems performance, is scheduled by COMOPTEVFOR aboard LPD 18 in December 2007. This phase will include both "soft-kill engagements" against anti-ship cruise missile targets (BQM-34SH drones) using the NULKA electronic decoy system and non-firing detect, track, and engage exercises against other anti-ship cruise missile targets. As a result of delays in BQM-34SH flight testing, the "soft-kill engagement" operational test may be jeopardized. The final IOT&E phase is a modeling and simulation effort to support an assessment of the ship's Probability of Raid Annihilation requirement. This is expected to be completed in FY09.
- The LFT&E Program has two test events remaining: the Total Ship Survivability Trial is planned for March 2008 and the Full Ship Shock Trial is planned for September 2008.

Assessment

- During the FCT, the Navy's Board of Inspection and Survey found significant deficiencies related to steering, water production, low-pressure air compressors, air conditioning units, and fire pumps. Significant progress was reported during the subsequent Post-Shakedown Availability, but additional maintenance periods will be required in the fall of 2007 in order to finish incomplete work.

- Once material readiness issues are resolved and the ship is equipped with fully integrated and tested systems, LPD 17 should provide considerable amphibious lift as well as greatly improved information technology, reduced susceptibility, and enhanced living conditions for the crew and embarked Marines.
- The C4I developmental test event clearly showed progress had been made in mitigating risks associated with supporting landing force C4I requirements. The Marine Corps Operational Test and Evaluation Activity observed the event and reported several concerns about C4I capability.
- PDT&T identified AN/SPS-48E radar performance degradation while enclosed in the AEM/S. PDT&T and combat system ship qualification trial have not demonstrated the capability to defend against anti-ship cruise missiles; however, the IOT&E includes a self-defense phase focused primarily on this capability.
- The survivability of the *San Antonio* class ships should be significantly improved over the 1970's-era amphibious ships they will replace. The increased survivability is attributed to: reduced RCS signature design features, strengthened hull girder design, improved bulkhead connections, improved fragmentation protection, fire insulation at fire zone boundaries, and redundant and separated vital systems.
- Aerial target support issues may jeopardize LPD 18 IOT&E in December.

Recommendations

- Status of Previous Recommendations. The three recommendations made in FY06 remain valid.
- FY07 Recommendations.
 1. Because the AN/SPS-48E radar is critical to the ship's capability to control aircraft and to defend itself, the Navy should correct the problem and conduct OT&E on the fix before deploying the ship.
 2. The Navy should aggressively resolve the shortage of high-diver ASCM targets. Deficiencies with anti-ship cruise missile targets used to test NULKA must also be resolved.