

NAVY PROGRAMS

LPD 17 Amphibious Transport Dock Ship

SUMMARY

- Operational assessment indicates that LPD 17 should meet its amphibious lift requirements, as well as offer reduced susceptibility and improved habitability compared to the ships that it will replace.
- Concerns include: the ship's combat system effectiveness against fighter/attack aircraft, some types of anti-ship cruise missiles, and torpedoes; adequacy of the command, control, communications, computers, and intelligence systems to support landing force requirements; tactical display management; support of night operations; chemical/biological defense; cargo handling; aircraft maintenance; and ship wide area network vulnerabilities.
- Adequate combat system initial operational test and evaluation (IOT&E) in FY06 will be a significant challenge. The Navy must test LPD 17; test its combat system on the Self Defense Test Ship and on LPD 18; validate the modeling and simulation with Self Defense Test Ship/LPD 18 results; and conduct simulation with the validated models and simulation. Test and Evaluation Master Plan updating is in progress.



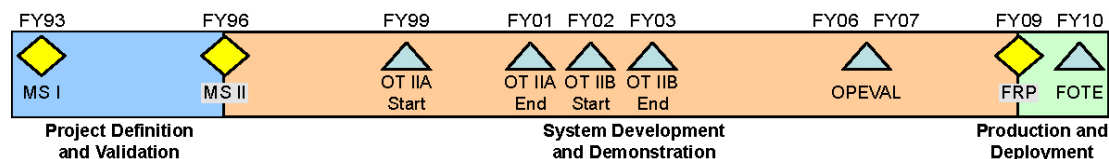
The LPD 17's principal mission is amphibious warfare – to embark, transport, and deploy the combat and support elements of Marine Expeditionary Units and Brigades in assault by helicopters, landing craft, amphibious vehicles, and by a combination of these methods.

SYSTEM DESCRIPTION AND MISSION

San Antonio (LPD 17) is an amphibious assault ship with a flight-deck for the aerial transport of troops and equipment by helicopters and MV-22s. It also has a floodable well-deck for air-cushioned landing craft, conventional landing craft, and current and advanced amphibious assault vehicles. The LPD 17's principal mission is amphibious warfare – to embark, transport, and deploy the combat and support elements of Marine Expeditionary Units and Brigades in assault by helicopters, landing craft, amphibious vehicles, and by a combination of these methods.

Self-defense capabilities of the LPD 17 include the Ship Self Defense System Mark 2 (Mod 2 variant), Rolling Airframe Missile, and the Nulka decoy to provide own-ship defense against anti-ship cruise missiles. Two Mark 46 Mod 1 30mm gun systems and other medium caliber machine guns provide defense against surface threats.

TEST AND EVALUATION ACTIVITY



Navy operational test agency concluded an operational assessment (OT-IIB) in FY04. An assessment team reviewed ship specifications and design drawings and examined results from modeling and simulation conducted as part of the ship design process to assess the ship's expected capability. Test and Evaluation Master Plan updating progressed in FY04. The nearly complete Live Fire Test and Evaluation (LFT&E) Detail Design vulnerability assessment exercises a variety of ship vulnerability models to determine the vulnerability of the *San Antonio* class ships to seven threat engagements, including a USS *Cole*-like scenario. Shot-line runs precede probability of kill given a hit analyses and crew recoverability scenarios. The Navy continued component shock qualification tests. LPD 19 will undergo shock trials vice LPD 17, resulting in a four to five month delay.

TEST AND EVALUATION ASSESSMENT

OT-IIB findings indicate that the LPD 17 provides considerable amphibious lift as well as advances in shipboard application of information technology, reduced susceptibility, and improved habitability for the crew and embarked

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Marines, but deficiencies exist. DOT&E agrees with the overall operational assessment findings, including the following:

- **Combat System.** The LPD 17 combat system's effectiveness depends on the integration of sensor, weapon, and control elements. Defense against fighter/attack-type aircraft is a concern. A Rolling Airframe Missile system upgrade to engage helicopters, some aircraft ("low/slow flyers," not jet aircraft), and surface craft will not field in time for LPD 17. There are concerns about the ship's self defense against anti-ship cruise missiles and its susceptibility to torpedoes.
- **Command, Control, Communications, Computers, and Intelligence.** Despite the Navy and Marine Corps' continuing efforts, shortcomings remain in the ship's command, control, communications, computers, and intelligence systems. Three systems considered necessary that are missing are:
 - Joint Operations Planning and Execution System (to originate and validate movement requests among Joint Task Force Service components, the regional Combatant Commander, and U.S. Transportation Command).
 - Theater Battle Management Core System (to coordinate airspace, flight operations, and targeting information in a Joint/combined environment).
 - High Frequency, Automatic Link Establishment radio (to allow reliable inter-/intra-force connectivity by means of HF radio).

Another system considered necessary—the Advanced Field Artillery Tactical Data System (to support fires)—is not part of the ship's baseline. Although the Navy states that the landing force can bring the needed hardware and software aboard the ship before deploying, this approach introduces integration and Information Assurance concerns. Other essential command, control, communications, computers, and intelligence systems were missing. Although the Navy states that these will be available, their availability for the ship's FY06 IOT&E is not clear. The ship's wide area network is crucial to mission accomplishment and should facilitate improved information technology capabilities. The ship wide area network has Information Assurance-related vulnerabilities, primarily due to internal security shortfalls in areas such as firewalls, intrusion/virus detection software, and network load management.

- **Tactical Display Management.** Real-time tracks from Ship Self Defense System Mark 2 do not fuse with near real time friendly unit positions and control measures provided by nonintegrated systems such as the ship's Amphibious Assault Direction System. System operators and supervisory personnel must manually deconflict the tracks, increasing their workloads and the risk of misclassifying a threat as a friendly or friendly as a threat.
- **Night Operations.** LPD 17 will not fully support concurrent, nighttime, flight-deck and well-deck operations due to incompatible lighting/night vision devices. It is doubtful there will be a solution in time for the LPD 17 IOT&E.
- **Chemical/Biological Defense.** There are no provisions for decontaminating landing craft, aircraft, and landing force equipment in the well-deck or on the flight-deck. This is an issue because the ship must interoperate with landing craft and helicopters that might be exposed to agents while ashore, and then return to the ship in a contaminated state. The ship needs an effective standoff chemical agent detector, but neither that nor a biological agent detector are in the requirements document.
- **Cargo Handling.** The ship carries a substantial amount of cargo, but there are no backup systems for the elevators that service two of the ship's three cargo and ammunition magazines. These two magazines hold approximately 85 percent of the supplies carried aboard the ship. The program is examining an emergency ordnance handling alternative.
- **Aviation Maintenance.** The ship's aviation crane will not be available for LPD 17's IOT&E. As a result, the ship will not have the capability to conduct certain organizational level maintenance actions (such as gearbox, rotor head, and engine replacement) on helicopters and tiltrotor aircraft within the Marine Corps' current and future fleet. LPD 17 should otherwise support landing force helicopters and tiltrotor aircraft.

In addition to LPD 17 testing, the Navy must conduct required testing of the combat system on a Self Defense Test Ship and on LPD 18; validate the modeling and simulation with Self Defense Test Ship/LPD 18 results; and conduct simulation with the validated models. Availability of IOT&E resources, particularly aerial targets, remains a concern.

The LFT&E program continues on track. The survivability of the *San Antonio* class ships should greatly improve that of the 1970's-era amphibious ships it will replace due to the reduced radar cross section signature design features, strengthened hull girder design, improved bulkhead connections, improved fragmentation protection, fire insulation at fire zone boundaries, and maximum use of redundancy and separation for vital systems.