

## LPD 17 AMPHIBIOUS TRANSPORT DOCK SHIP



### Navy ACAT ID Program

Total Number of Systems:	12
Total Program Cost (TY\$):	\$10,700M
Average Unit Cost (TY\$):	\$745M
Full-rate production:	3QFY07

### Prime Contractor

Avondale Industries

### SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2010

The LPD 17 will be a diesel-powered amphibious assault ship capable of transit through the Panama Canal. It will transport and deploy the combat and support elements of Marine Expeditionary Brigades as a key component of amphibious task forces. LPD 17 will be capable of transporting and debarking forces by surface assault craft, including assault amphibious vehicles (AAVs or AAVs) and landing craft air cushion (LCAC) vehicles, as well as helicopters and the tilt-rotor V-22 OSPREY, contributing to *dominant maneuver*, *precision engagement*, and *focused logistics*. Side ports will enable the embarkation and debarkation of troops and rolling equipment, and a floodable well deck will permit operation of LCACs and AAV/AAV craft. Storage and offload capabilities will be incorporated for all classes of supplies, including fuel, ammunition, and food for amphibious forces ashore. Ship spaces will be configured for amphibious craft logistic support and limited aviation maintenance and refuel/rearm servicing on the flight deck.

Self-defense capabilities of the LPD 17 will include a cooperative engagement capability with other task force vessels, plus own-ship self defense against sea-skimming anti-ship cruise missiles. Command, control, communications, computer and intelligence (C<sup>4</sup>I) systems will be interoperable with other service systems through a modern Ship-Wide Area Network.

## **BACKGROUND INFORMATION**

LPD 17 is being designed to replace several classes of aging amphibious ships, including the LKA, LPD 4, LSD 36, and LST 1179. With minor exceptions, the LPD 17 will be required to perform most of the functions of the four classes it will replace.

As the first major ship design program initiated under the revised DoD acquisition regulations, LPD 17 completed a Milestone II review in June 1996. DOT&E approved the TEMP in May 1996. A proposed revision to the TEMP is in preparation, including minor changes to the LFT&E strategy. DOT&E has participated in TEMP working group meetings, providing insight and oversight for the TEMP revision, including improvements in the LFT&E strategy.

Early Operational Assessments (OT-IA and OT-IB) were conducted by COMOPTEVFOR in FY95 and FY96, respectively. The results thereof had definite impact on the preliminary design process. The third operational assessment, OT-IIA, began in June 1999 and is currently in progress.

The LPD 17 LFT&E program consists of a combination of surrogate tests, component and system tests, a Shock Trial, a Total Ship Survivability Trial, and analyses and modeling. Results of these tests and analyses are being reported in a series of Vulnerability Assessment Reports (VARs) at the end of various stages of ship design and construction.

## **TEST & EVALUATION ACTIVITY**

OT-IIA is currently being conducted as a series of evaluations of the completed detail design of the ship. As with previous OAs, OT-IIA is being performed by a large group of fleet experts in the various disciplines associated with amphibious warfare organized under the leadership of COMOPTEVFOR. A TEMP update to better describe the details of OT-IIB and OPEVAL is now being prepared.

DOT&E actively participated in various LPD 17 LFT&E working group meetings. During these meetings, DOT&E provided insight and oversight in regard to Navy LFT&E planning for conduct of the LPD 17 Detail Design VAR and preparation of the Detail Design VAR.

## **TEST & EVALUATION ASSESSMENT**

Funding shortfalls in the LPD 17 program have caused the Navy to delete several self-defense systems from the planned configuration of the ship. Elimination of the Vertical Launch System and the Evolved Sea Sparrow Missile will leave only the Rolling Airframe Missile (RAM) as an active air defense system for the ship and embarked landing force. Based on RAM testing to date using the Self-Defense Test Ship, we have concern that the planned defensive weapons (RAM only) will not provide adequate self-defense capability for the LPD 17. This will dictate operational choices between accepting relatively high susceptibility for LPD 17 during single-ship operations or the operational burden of

providing escorts in hostile waters. As testing of the LPD 17 weapon system and other subordinate systems progresses, DOT&E will update our assessment of LPD 17 survivability.

As results begin to emerge from OT-IIA, it becomes apparent that several deficiencies discovered during the EOAs in 1995 and 1996 have not been corrected in the detail design of the ship. Despite the unmistakable trend toward improving the armed forces' capabilities to fight at night with night vision devices (NVD), the LPD 17 design still does not fully support night operations because of a lack of night lighting compatible with NVD. Several areas appear to be affected, including the well deck, flight deck, and control spaces (such as primary flight control and debarkation control). Another deficiency identified is that only Diesel Fuel Marine, not the aviation JP5 fuel, can be received at the forward and aft fueling-at-sea stations on the port (left) side of LPD 17. This is a nonstandard configuration for amphibious ships and will cause a significant increase in time alongside a refueling ship for an Amphibious Ready Group/Amphibious Task Force because the refueling ship must take both the LHA/Ds and LPD 17s to its portside and only the LSDs to its starboard (right) side. Failure to incorporate these corrections during the design phase could limit the operational effectiveness of the ship in OPEVAL and necessitate correction by retrofit, a much more costly approach.

DOT&E and the Navy have reached agreement on draft revisions to the LPD 17 LFT&E strategy in the Navy's proposed revision of the LPD 17 TEMP. The Navy's approach for preparation of the Detailed Design VAR provides confidence that the LPD 17 VAR will meet LFT&E objectives. However, delays in the availability of Detail Design data from the shipbuilder and delays in development of modeling and simulation tools are likely to delay completion of the Detail Design vulnerability assessment. DOT&E review of Navy funding planned for the LPD 17 Shock Trial has raised doubts about the adequacy of this funding for preparation and conduct of an effective Shock Trial. DOT&E is continuing to work with the Navy to resolve this question.

## **CONCLUSIONS, RECOMMENDATIONS, LESSONS LEARNED**

The Milestone II vulnerability assessment revealed vulnerabilities in vital ship systems (e.g., the zonal electrical distribution system), and needs for improved troop evacuation procedures and well deck fire fighting procedures. The Navy is taking corrective actions in these areas that will be evaluated further in the Detail Design vulnerability assessment.

