

NAVY PROGRAMS

DD(X) Land Attack Destroyer

SUMMARY

- Navy testers completed an early operational assessment of the preliminary DD(X) design in Q1FY05 to support Milestone B.
- Developmental testing of the Multi-Function Radar engineering development model began in Q1FY05 at Wallops Island, Virginia.
- Developmental testing of the Long-Range Land Attack Projectile began in Q1FY05 at San Nicolas Island, California.
- Autonomic Fire Suppression System feasibility demonstrated in testing aboard Ex-Peterson.
- Live Fire Test & Evaluation (LFT&E) of the Peripheral Vertical Launch System successfully demonstrated a new missile storage concept.
- Navy's proposal for testing DD(X) self-defense against anti-ship cruise missiles is not adequate.



SYSTEM DESCRIPTION AND MISSION

DD(X) is the replacement for *Spruance* (DD 963) class destroyers and *Oliver Hazard Perry* (FFG 7) class frigates, which are reaching the end of useful service life. DD(X) will be a multi-mission destroyer with a composite deckhouse. It will have integrated sensor and communications apertures and a Wave-Piercing Tumblehome Hull. Displacement will be about 14,000 tons. Optimized for the land-attack mission, it will have two Advanced Gun Systems and a combined magazine capacity of 600 rounds of long-range land attack munitions. A convertible storeroom will carry 320 additional rounds when required. Each Advanced Gun System will consist of a single-barrel 155mm gun supplied from an automated magazine. An Advanced Vertical Launch System with 80 cells will carry Tomahawk Land Attack Missiles, Standard Missiles (SM2-MR) for local air defense, Evolved Seasparrow Missiles for air and surface threats, and Vertical Launch Anti-Submarine Rockets to combat submarine threats. Two 57mm Close-In Gun Systems will protect against close-in air and surface threats. Operational requirements include full-spectrum signature reduction so the ship can operate in all threat environments.

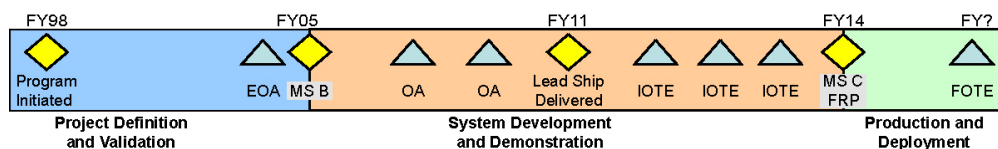
DD(X) will be a multi-mission destroyer featuring a composite deckhouse and a Wave-Piercing Tumblehome Hull displacing about 14,000 tons.

DD(X)'s integrated power system will share electrical power between propulsion motors and other electrical loads such as combat systems and auxiliary services. The Navy expects the new Dual Band Radar suite and the Integrated Undersea Warfare System to provide state-of-the-art battle space surveillance. Advances in survivability and shipboard computing systems should reduce crew size, with further reductions possible by incorporating new technology during follow-on ship development.

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On April 29, 2002, the Navy announced it selected Northrop Grumman Ship Systems as the DD(X) design agent. Raytheon is the system integrator. The program office will seek approval to proceed with lead ship construction at Milestone B in March 2005.

TEST AND EVALUATION ACTIVITY



NAVY PROGRAMS

- DOT&E participated in DD(X) requirements and design reviews including design reviews for the twelve Engineering Development Models of ship systems with the greatest technical risk. Among them are Advanced Gun System, Long Range Land Attack Projectile, Advanced Vertical Launch System, Integrated Deck House and Apertures, Total Ship Computing Environment, and the Integrated Propulsion System. Additionally, DOT&E has been active in the development of the draft DD(X) Test and Evaluation Master Plan and LFT&E Management Plan.
- Design Agent test activity included a series of Engineering Tests and higher-level developmental tests designed to mitigate risk.
- DOT&E participated in an early operational assessment conducted by the Navy's Operational Test and Evaluation Force. Teams of subject matter experts from the fleet and Navy shore activities examined the ship's design and the analyses, modeling, and simulation used by the developers to assess design risk, identify capability gaps, and recommend potential design enhancements.
- LFT&E activity was extensive in FY04. The program tested the newly developed automatic fire suppression system aboard ex-*Peterson* using a surrogate threat weapon at sea. During the test, the automatic fire suppression system reconfigured itself using sensors and Smart Valve technology. The shipboard fires were controlled and eventually extinguished. In a second test, testers allowed a severe fire to burn for several minutes before activating the automatic fire suppression system. The system was able to contain the fire without a manned response. Additionally, the program office tested a new approach to storing missiles in a full-scale replica of the peripheral vertical launch system. The challenging detonation scenario involved exploding a threat warhead where it would create a mass detonation of the stowed ordnance in the launcher. Although demonstration of the concept was successful, some redesign of the peripheral vertical launch system structure is required.

TEST AND EVALUATION ASSESSMENT

The Joint Requirements Oversight Council approved the DD(X) Operational Requirements Document in FY04. We expect to approve the Test and Evaluation Master Plan in FY05 if the Navy proposes an acceptable approach for end-to-end mission testing of DD(X) close-in self defense against anti-ship cruise missiles (ASCM). That approach has to include end-to-end testing with DD(X) combat system elements on the Self Defense Test Ship. The proposal to date is for unacceptable segmented vice end-to-end operational testing. Further, their proposal for assessing the probability of ASCM raid annihilation departs in significant ways from the approach being followed by LPD 17 and envisioned for future ship classes. This raises questions of whether it is executable, minimizes the opportunity to reduce costs through shared test and evaluation resources, and departs from use of a consistent probability of ASCM raid annihilation assessment approach across the several ship classes.

Another operational testing challenge stems from the fact that no existing Navy test facilities can accommodate end-to-end testing of the Advanced Gun System and Long Range Land Attack Projectile against realistic targets.

DD(X) has a robust LFT&E program that will provide a comprehensive survivability evaluation of the advanced technologies used in this new generation destroyer. DOT&E will work with the program office to complete the LFT&E Management Plan and waiver in FY05.