

DDG 1000 *Zumwalt* Class Destroyer

Executive Summary

- The program continued detailed design, systems integration, and technology risk reduction in FY08. Developmental testing and an operational assessment (OT-B1) examined a range of major warfare mission and ship support areas, which identified potential ship design and performance risks.
- The Navy shifted the Acquisition Strategy, reducing the DDG 1000 total procurement from seven to two or three. This, coupled with awarding a contract for the Threat D target, has created a great deal of uncertainty within the production and testing communities regarding schedule.
- The Navy is delaying an update to the Test and Evaluation Master Plan (TEMP) until after the submission of the FY10 budget and the program gains more stability.
- Although no LFT&E activity occurred in FY08, an active and robust program is in place to gain survivability insights.

System

DDG 1000 is a new combatant ship with a wave piercing efficient hull form designed both for endurance and to be difficult to detect on radar. It is equipped with:

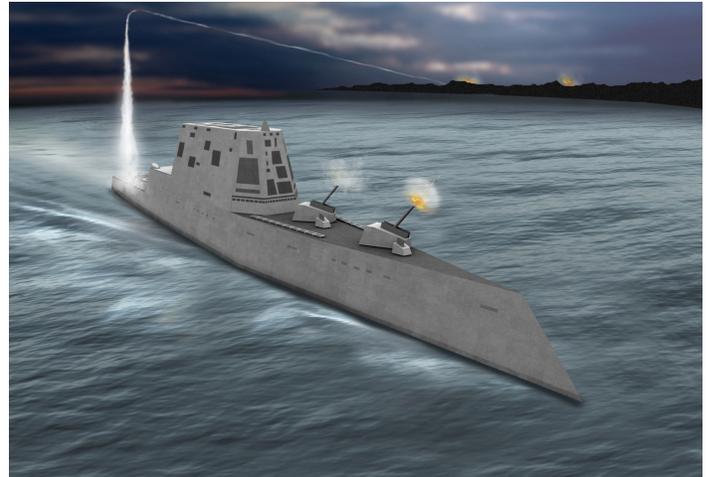
- Two 155 mm Advanced Gun Systems (AGS) that fire the Long-Range Land Attack Projectiles
- Dual Band (X-Band and S-Band) Radar capable of performing all search and fire control functions for both air and surface
- Eighty vertical launch cells that can hold a mix of Tomahawk missiles, Standard Missiles, Vertical Launch Anti-Submarine Rockets, or Evolved SeaSparrow Missiles
- Integrated Undersea Warfare system with a dual frequency bow mounted sonar and multi-function towed array sonar to detect submarines and assist in avoiding mines
- An ability to embark and maintain MH-60R helicopters and vertical take-off unmanned aerial vehicles

Mission

- The Joint Force Maritime Component Commander can employ DDG 1000 to accomplish:
 - Land Attack Warfare - Joint Surface Strike and Joint Surface Fire Support

Activity

- Significant developmental testing occurred on the Dual Band Multi-function Radar, Total Ship Computing Environment/Infrastructure, and hull form in FY08.
- The Navy began an operational assessment (OT-B1) in March 2008. The final report is expected in March 2009.
- The Navy awarded a contract to proceed with the development and production of a surrogate target to address



- Anti-Surface Warfare
- Anti-Air Warfare (self-defense)
- Undersea Warfare (self-defense)
- DDG 1000 can operate independently or in conjunction with an Expeditionary or Carrier Strike Group as well as with other joint or coalition partners in a Combined Expeditionary Force environment.

Prime Contractors

- Bath Iron Works
- BAE Systems
- Northrop Grumman
- Raytheon

a specific Anti-Ship Cruise Missile threat referred to as Threat D, thus paving the way for DOT&E's approval of the TEMP update.

- The Navy is reassessing their Acquisition Strategy for DDG 1000 and has decided to reduce production and delivery from seven to only two or three. Due to acquisition and anticipated production schedule changes, the Navy is

postponing the TEMP update until Congress acts on the president's FY09 defense budget and the Navy submits their FY10 budget.

Assessment

- Initial impressions from the operational assessment (OT-B1) identified the following:
 - Navy training and shore-side logistics plans do not currently support DDG 1000's small crew size and the expectation of immediate qualification upon reporting aboard.
 - Ship operations require a large number of Top Secret/Special Compartmental Information (TS/SCI) clearances, which could impact the ability to sustain manning.
 - Important software functionality has been delayed to later builds, thereby increasing risk.
 - The electronic support system has not yet been identified, also increasing risk.
 - AGS operations may not be sustainable in rough weather.
- Planned testing on the Self-Defense Test Ship only includes Evolved SeaSparrow Missile engagements. Without advanced testing of Standard Missile (SM)-2 prior to lead ship delivery, the program risks potential cost and schedule delays.
- The Navy has not identified adequate facilities for measuring the ship's magnetic, acoustic, infrared, and radar signatures. While there are Navy efforts with respect to facilities for operational testing, long-term life-cycle facilities are not being addressed.

- The DDG 1000 supports a robust LFT&E program providing a comprehensive survivability evaluation of the new technologies employed by this new generation of destroyers.
- The Navy identified a potential land-based range for conducting operational end-to-end testing of Land Attack Warfare, one of the ship's major mission areas, using the AGS against realistic targets. The Integrated Production Team continues to assess the feasibility of the end-to-end test capability and the impact of that upon the previously approved LFT&E lethality strategy.

Recommendations

- Status of Previous Recommendations. One of the four FY05 recommendations and one of the two FY07 recommendations remain valid.
- FY08 Recommendations. The Navy should:
 1. Conduct developmental SM-2 firings using the DDG 1000 combat system on the Self-Defense Test Ship. These firings would reduce risk if conducted earlier than the lead ship firings.
 2. Develop a test approach (including range resources) for at-sea testing of the AGS against threat-representative targets.
 3. Develop and fund the shore-based logistics and maintenance infrastructure for the upkeep of the DDG 1000 class.