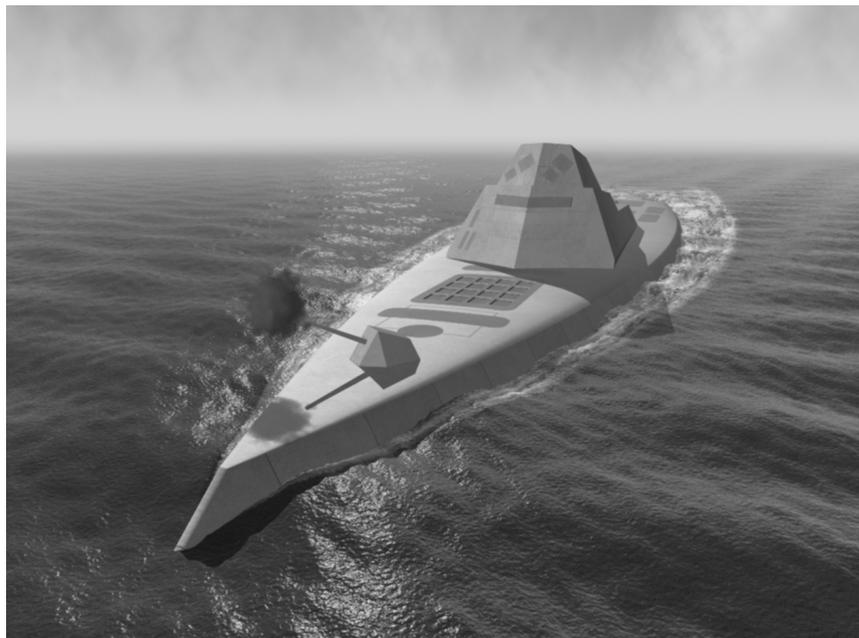


TWENTY FIRST CENTURY DESTROYER (DD 21)



Navy ACAT ID Program

Total Number of Systems:	32
Total Program Cost (TY\$):	\$46,470.6M
Average Unit Cost (TY\$):	\$1357.99M
Full-rate production:	3QFY11

Prime Contractor

TBD

SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2010

The Twenty First Century Destroyer (DD 21) is the first in a family of Twenty First Century Surface Combatants (SC 21) and is envisioned to provide independent forward presence/deterrence and operate as an integral part of Naval, Joint and Combined maritime forces. Tailored for land attack, DD 21's mission is to carry the war to the enemy through offensive operations. It enables *precision engagement* and *dominant maneuver* by conducting littoral operations that include the launch and support of precision strike weapons and firepower support for amphibious and other ground forces. DD 21 also provides *full-dimensional protection* from enemy attack to friendly forces through the establishment and maintenance of surface/subsurface superiority and local air defense. Signature reduction is to be incorporated into the DD 21 design, allowing it to operate in all threat environments. DD 21 is the numerical replacement for retiring SPRUANCE (DD 963) Class destroyers and OLIVER HAZARD PERRY (FFG 7) Class frigates, which will reach their end of service life during the 2005-2007 timeframe.

BACKGROUND INFORMATION

DD 21 is a Major Defense Acquisition Program, and successfully completed its Milestone I in early FY98. DOT&E approved the DD 21 TEMP in early FY98 prior to the Milestone I decision.

During Phase I of the DD 21 acquisition, two competing teams performed requirement analyses and trade studies, to develop two competitive DD 21 system concept designs. The acquisition strategy requires operational test planning to evolve concurrently with the DD 21 ship/system design. Additionally, the TEMP mandates appropriate updates as the program matures. IOT&E of DD 21 consists of a series of EOAs, which began in FY99, to support a Milestone II decision in FY04. A series of OAs and an OPEVAL are planned to support the FY11 Milestone III. FOT&E will be conducted to verify correction of deficiencies and complete deferred or incomplete OT&E. OT&E will be combined with or conducted concurrently with DT as practical and appropriate.

The Navy's LFT&E program for DD 21 will use a combination of surrogate tests, component and system tests, a Shock Trial, a Total Ship Survivability Trial, and modeling and simulation to assess the vulnerability of DD 21 to threats likely to be encountered during combat. The modeling and simulation effort will be calibrated by the results of the various tests, as well as previous combat incidents, to assess the vulnerability of the DD 21 Class ship in damage scenarios reflecting realistic threat encounters. The Navy will develop a series of Vulnerability Assessment Reports (VARs) keyed to the various stages of ship design and construction to report the results of their LFT&E effort.

TEST & EVALUATION ACTIVITY

During FY99, DOT&E continued to actively participate in the program's Test and Evaluation Working Integrated Product Teams and attended industry team program reviews. In May 1999, DOT&E approved change 1 to the DD 21 TEMP, updating the program's schedule, reflecting the two competing industry teams and detailing the test and evaluation assessment process. Industry team test and evaluation documentation was reviewed to gain insight into the competing industry teams' concepts and the testing implications associated with those concepts.

The intent of the Navy's acquisition strategy is to provide the industry teams little guidance other than the Operational Requirements Document. Due to this strategy, LFT&E was not included in the Phase I Request for Proposal. Neither industry team has adequately addressed LFT&E in their test and evaluation planning documentation. A LFT&E contract modification issued late in Phase I should begin to focus industry attention on LFT&E in the near future. DOT&E approved the use of the ex-USS DALE (CG 19) for weapons effects tests to collect data on the ballistic damage that results when a missile impacts ship structure, and has participated in government planning for this significant testing effort.

TEST & EVALUATION ASSESSMENT

The T&E integrated test program (ITP) for DD 21 has been very effective, and with DOT&E's early involvement has provided a solid framework for EOAs and testing. DD-21's acquisition strategy and ITP schedule provide a good opportunity for "testing for learning" during the program definition and risk reduction phase. To facilitate such learning and support the preparation of approvable TEMPs by the competing industry teams, DOT&E and OPTEVFOR are participating in the engineering reviews of various industry proposals, monitoring the progress of potentially related advanced technologies demonstrations and are providing feedback via the program manager.

Plans for LFT&E surrogate testing efforts remain tentative while the Navy waits for the competing industry teams to develop ship design concepts and a testing program. Due to the unique acquisition strategy being utilized for this platform, the LFT&E program is less mature than is normally experienced post-Milestone I. Very demanding operational requirements, such as improved survivability and minimum manning, have created significant risk in the areas of recoverability and damage control manning to meet mission readiness requirements after sustaining combat damage. Realistic surrogate testing must address the most significant areas of vulnerability uncertainty, such as fire spread and the ability to extrapolate shock trial results to realistic encounter conditions for proximity underwater bursts. LFT&E surrogate testing in July 1998 offered significant lessons learned from warhead weapons effects testing in the ex-USS R.K. TURNER (CG 20). Most important, the damage observed far exceeded the damage predicted. The unpredictability of damage, particularly synergistic damage mechanisms, is clearly beyond the capabilities of modeling and simulation today, nor can it be replicated in land-based arena tests. This further underscores the need to take advantage of every opportunity available to test threat weapons against realistically configured surrogate ships at sea.

The Navy delivered a draft of the Milestone I VAR to DOT&E for review in February 1999. The assessment, the first in a series of four (VARs), was an incomplete evaluation of the vulnerability of DD 21. The report assessed one government concept that may or may not have any similarity to the final ship design, and attempted to show that the vulnerability requirements defined in the Operational Requirements Document were achievable. The Navy concluded that the concept did indeed meet the vulnerability requirements; however, DOT&E concluded that some of the concept assumptions were unrealistic. The VAR did not examine all of the vulnerability requirements, nor did it address all of the threat weapons called for in the LFT&E Management Plan. DOT&E submitted its proposed changes to the Navy for incorporation into the next VAR.

