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Navy DDG(X) Next-Generation Destroyer Program: Background and Issues for Congress

Introduction

The Navy's DDG(X) program envisages procuring a class of next-generation guided-missile destroyers (DDGs) to replace the Navy's Ticonderoga (CG-47) class Aegis cruisers and its older Arleigh Burke (DDG-51) class Aegis destroyers. The Navy wants to procure the first DDG(X) in FY2028. The Navy's proposed FY2022 budget requests \$121.8 million in research and development funding for the program.

Terminology

Since the 1980s, there has been substantial overlap in the size and capability of Navy cruisers and destroyers. In part for this reason, the Navy now refers to its cruisers and destroyers collectively as large surface combatants (LSCs).

Surface Combatant Industrial Base

All LSCs procured for the Navy since FY1985 have been built at General Dynamics/Bath Iron Works (GD/BIW) of Bath, ME, and Huntington Ingalls Industries/Ingalls Shipbuilding (HII/Ingalls) of Pascagoula, MS. Lockheed Martin and Raytheon are major contractors for Navy surface ship combat system equipment. The surface combatant base also includes hundreds of additional component and material supplier firms.

Existing Aegis Cruisers and Destroyers

The Navy's CG-47s and DDG-51s are commonly called Aegis cruisers and destroyers because they are equipped with the Aegis combat system, an integrated collection of sensors and weapons named for the mythical shield that defended Zeus. The Navy procured 27 CG-47s between FY1978 and FY1988. The ships entered service between 1983 and 1994. The first five, which were built to an earlier technical standard, were judged by the Navy to be too expensive to modernize and were removed from service in 2004-2005. The Navy's FY2020 30-year shipbuilding plan projected that the remaining 22 CG-47s would be retired between FY2021 and FY2038.

The first DDG-51 was procured in FY1985 and entered service in 1991. The Navy's older DDG-51s, known as the Flight I/II DDG-51s, have an expected service life of 35 years. The version of the DDG-51 that the Navy is currently procuring is called the Flight III version. The Navy also has three Zumwalt (DDG-1000) class destroyers that were procured in FY2007-FY2009 and are equipped with a combat system that is different than the Aegis system. (For more on the DDG-51 and DDG-1000 programs, see CRS Report RL32109, *Navy DDG-51 and DDG-1000 Destroyer Programs: Background and Issues for Congress*, by Ronald O'Rourke.)

DDG(X) Program

Program Designation

In the program designation DDG(X), the X means the precise design for the ship has not yet been determined.

Procurement Date for Lead Ship

As mentioned earlier, the Navy wants to procure the first DDG(X) in FY2028, though the date for procuring the first ship has changed before and could change again. Procurement of DDG-51s—the type of LSC currently being procured by the Navy—would end sometime after procurement of DDG(X)s begins.

Figure 1. Navy Rendering of Notional DDG(X) Design



Source: Illustration accompanying Sam LaGrone, "Navy Unveils Next-Generation DDG(X) Warship Concept with Hypersonic Missiles, Lasers," *USNI News*, January 12, 2022. The article credits the illustration to the U.S. Navy.

Navy's General Concept for the Ship

Figure 1 shows a Navy rendering of a notional DDG(X) design concept. The Navy approved the DDG(X)'s top-level requirements (i.e., its major required features) in December 2020. The Navy envisages the DDG(X) as having

- an integrated propulsion system (IPS) that incorporates lessons from the DDG-1000 IPS and the Navy's new Columbia-class ballistic missile submarine;
- initially, combat system equipment similar to that installed on the Flight III DDG-51; and
- more weapon capacity than the Flight III DDG-51.

Navy officials envision the DDG(X) as being larger than the 9,700-ton Flight III DDG-51 design, but smaller than

the 15,700-ton DDG-1000 design. A DDG(X) design midway in displacement between the DDG-51 and DDG-1000 designs would displace about 12,700 tons, but the DDG(X)'s displacement could turn out to be less than or more than 12,700 tons. The Navy states that the DDG(X) would

integrate non-developmental systems into a new hull design that incorporates platform flexibility and the space, weight, power and cooling (SWAP-C) to meet future combatant force capability/system requirements that are not achievable without the new hull design. The DDG(X) platform will have the flexibility to rapidly and affordably upgrade to future warfighting systems when they become available as well as have improved range and fuel efficiency for increased operational flexibility and decreased demand on the logistics force. DDG(X) will provide an Integrated Power System with flexibility to enable fielding of high demand electric weapons, sensor systems and computing resources.

(Source: *Department of Defense Fiscal Year (FY) 2022 Budget Estimates, Navy, Justification Book, Volume 2 of 5, Research, Development, Test & Evaluation, Navy, May 2021, p. 479.*)

Potential Procurement Quantities

The Navy has not specified how many DDG(X)s it wants to procure. Procuring 11 would provide one for each of the Navy's 11 aircraft carriers. Procuring 22 would provide one-for-one replacements for the 22 CG-47s. Procuring additional DDG(X)s to replace older DDG-51s would result in a larger total procurement quantity.

Potential Unit Procurement Cost

The first DDG(X) would be considerably more expensive to procure than follow-on DDG(X)s because its procurement cost would incorporate most or all of the detailed design and nonrecurring engineering (DD/NRE) costs for the class. (It is a traditional Navy budgeting practice for the procurement cost of the lead ship in a class to incorporate most or all of the DD/NRE costs for the class.)

In constant FY2019 dollars, the Navy wants the first DDG(X) to have a procurement cost of \$3.5 billion to \$4.0 billion, and for the 10th ship in the class to have a procurement cost of \$2.1 billion to \$2.5 billion. An April 2021 Congressional Budget Office (CBO) report estimates the average procurement cost of the DDG(X) at \$2.9 billion in constant FY2021 dollars. By way of comparison, the Flight III DDG-51's current procurement is about \$2.0 billion.

Issues for Congress

Issues for Congress regarding the DDG(X) program include the following:

- whether the Navy has accurately identified the DDG(X)'s required operational capabilities and estimated procurement cost;
- the DDG(X) program's potential total procurement quantity and annual procurement rate;

- the number of shipbuilders to be used in building DDG(X)s;
- the Navy's plan for maturing new technologies for the DDG(X);
- the Navy's plan for transitioning from DDG-51 procurement to DDG(X) procurement, and the potential impact of that transition on shipbuilders and supplier firms.

For further discussion of the final issue above, see CRS Report RL32109, *Navy DDG-51 and DDG-1000 Destroyer Programs: Background and Issues for Congress*, by Ronald O'Rourke.

FY2022 Funding Request and Congressional Action

The Navy's proposed FY2022 budget requests \$121.8 million in research and development funding for the program, including \$79.7 million in Project 0411 (DDG[X] Concept Development) within Program Element (PE) 0603564N (Ship Preliminary Design & Feasibility Studies), which is line 47 in the Navy's FY2022 research and development account, and \$42.1 million for "DDG(X) Power & Propulsion Risk Mitigation & Demonstration," which forms part of Project 2471 (Integrated Power Systems [IPS]) within PE 0603573N (Advanced Surface Machinery Systems), which is line 49 in the Navy's FY2022 research and development account.

The joint explanatory statement for the FY2022 National Defense Authorization Act (S. 1605/P.L. 117-81 of December 27, 2022) recommends approving the Navy's research and development funding requests for the DDG(X) program. Section 221 directs the Navy to commence a land-based test program for the DDG(X) engineering plant during the program's detailed design period and prior to the construction start date of the lead ship.

The House Appropriations Committee's report (H.Rept. 117-88 of July 15, 2021) on the FY2022 DOD Appropriations Act (H.R. 4432) recommended reducing line 47 by \$55.488 million for "DDG(X) design and analysis excess to need," and reducing line 49 by \$19.050 million for "DDG(X) power and propulsion risk mitigation and demonstration excess to need." (Page 266) The Senate Appropriations Committee, in the explanatory statement it released on October 18, 2021, for the FY2022 DOD Appropriations Act (S. XXXX), recommended reducing line 47 by \$71.17 million for "Project 0411 Design and analysis and program management growth early to need." (PDF page 175 of 254) The explanatory statement states that "the Navy has not clearly explained the rationale for transitioning to a new class of" LSCs, and that "the Committee does not have confidence in the Navy's ability to manage the acquisition and contracting for a new class of LSC at this time." (PDF pages 178-179 of 253).

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