

FFG 62 Constellation Class – Guided Missile Frigate

The Constellation Class – Guided Missile Frigate (FFG 62) LFT&E program is currently conducting Phase 1 survivability testing to support model development and validation. This testing, along with completion of modeling and simulation (M&S) plans and validation, expected in 2022, supports an initial survivability assessment of the FFG 62 design. The Navy intends to conduct an early operational assessment of the FFG 62 program in 2QFY22.



System Description

The FFG 62 is a new multi-mission surface combatant intended to operate in complex operational environments with capability to conduct air warfare, anti-submarine warfare, surface warfare, electronic warfare/information operations, and intelligence, surveillance, and reconnaissance missions. The FFG 62 will be smaller and less capable than U. S. Navy destroyers and cruisers, but will have more offensive capability and survivability than previous small surface combatants (e.g., Littoral Combat Ships).

Program

The FFG 62 is an Acquisition Category IB Major Defense Acquisition Program intended to meet the Navy's Small Surface Combatant requirement. The Navy approved the FFG 62 program to enter the acquisition process at Milestone B on November 8, 2018. Having completed the statutory requirements, the Navy approved Milestone B on April 29, 2020. Concurrently, the Navy approved the award of the Detail Design and Construction contract for the first ship, with options for up to ten additional ships, and entry into the Detail Design and Construction (Production) phase with a low-rate initial production quantity of twenty ships. The Navy intends to conduct a Critical Design Review by March 2022, and deliver the lead ship by September 2026.

In June 2020, DOT&E approved the FFG 62 Test and Evaluation Master Plan with the exception of the strategy for testing its anti-air warfare mission capability. The Navy and DOT&E are working together to develop an adequate strategy to test this capability.

DOT&E approved the FFG 62 LFT&E Strategy in April 2020. The FFG 62 LFT&E Strategy includes full-ship shock trials with the option of pursuing an M&S-based shock trial alternative. In coordination with the DOT&E, the Navy will need to first validate M&S as adequate to address LFT&E shock trial objectives.

Major Contractor

Fincantieri Marinette Marine Corporation – Marinette, Wisconsin.

Test Adequacy

In FY21, the Navy conducted the Phase I survivability test program, in accordance with DOT&E-approved test plans, providing adequate data to support M&S development and validation even though this phase did not evaluate specific FFG 62 structure.

The first tests in the test program were a series of Extended Distance Multiple Plate ballistic tests in which fragment simulators and bullets were fired at an array of offset metal plates to record penetration, break-up, residual mass, and residual velocity.

The second test series investigated near-contact underwater explosions against surrogate ship structure in which a series of small charges were detonated in close proximity to stiffened metal plates at offsets that would generate holing.

Effectiveness

The Navy conducted no operational testing in FY21. The Navy intends to conduct an early operational assessment of the FFG 62 program in 2QFY22.

Suitability

The Navy conducted no operational testing in FY21. The Navy intends to conduct an early operational assessment of the FFG 62 program in 2QFY22.

Survivability

The Navy remains in development of the Detail Design Survivability Assessment Report M&S Plan to include verification and validation plans for specific M&S codes following completion of the Phase I survivability testing. COVID-19 delayed classified work in FY21. These efforts intend to support the Detail Design Survivability Assessment Report scheduled to be delivered in FY25.

The Navy compared the results of the Extended Distance Multiple Plate ballistic tests to available computer modeling techniques to assess M&S adequacy and determine M&S modification requirements. The results of these tests showed good correlation with existing penetration models for some metrics, but also showed a need for M&S improvement in others.

Analysis of the near-contact underwater explosion tests is in progress. DOT&E expects a report in FY22.

Recommendation

1. The Program Office PMS 515 should generate the Detail Design Survivability Assessment Report M&S Plan and individual M&S validation plans in accordance with the FFG 62 LFT&E strategy.