# DDG 51 Flight III Destroyer



In March 2024, the Missile Defense Agency (MDA), in collaboration with the Navy's Operational Test and Evaluation Force (OPTEVFOR), conducted the Flight Test Aegis Weapon System-32 (FTM-32) event as an integrated test to demonstrate the capability to detect, track, engage, and intercept a medium-range ballistic missile target. The lead ship for DDG 51 Flight III, USS *Jack H. Lucas* (DDG 125), participated in the flight test as part of IOT&E for Air and Missile Defense Radar (AMDR) / AN/ SPY-6(V)1, DDG 51 Flight III, and Aegis Weapon System (AWS) Baseline 10. The Navy expects to complete IOT&E in FY28.

#### SYSTEM DESCRIPTION

DDG 51 Flight III is an evolutionary development of the DDG 51 program. The DDG 51 Flight III is a combatant ship equipped with the following:

 Aegis Combat System (ACS) including the AWS, used for integrated air and missile defense, surface warfare, antisubmarine warfare, and strike missions and self-defense and area-defense against current and future threats.

 AMDR / AN/SPY-6(V)1, a three-dimensional (range, altitude, and azimuth), multifunction, active electronically scanned array radar.

- AN/SPQ-9B horizon search radar to detect air and surface contacts.
- AN/SQQ-89 undersea warfare suite, which includes the AN/ SQS-53 sonar and the TB-37U Multi-Function Towed Array.
- Close-In Weapon System Block
   1B for ship self-defense.
- Cooperative Engagement Capability (CEC) tracker and radar data sharing network.
- Surface Electronic Warfare Improvement Program (SEWIP) Block 2 (AN/SLQ-32(V)6) for electronic support.
- Five-inch diameter gun for surface warfare and land attack.
- MH-60R helicopters that support surface and undersea warfare.
- Mk 32 Surface Vessel Torpedo Tubes for over-theside Mk 54 Torpedoes.
- Mk 38 25mm guns for small boat and unmanned aerial systems defense.
- Vertical Launch System that can launch Tomahawk; Standard Missiles 2, 3, and 6; Evolved Sea Sparrow Missile (ESSM) Blocks 1 and 2, and Anti-Submarine Rockets.

The Navy added a starboard enclosure to the DDG 51 Flight III to accommodate berthing for 30 additional sailors. This modification necessitated stacking the ship's two 7-meter boats. Additionally, the fantail was widened and additional ship structure was added to provide sufficient weight and buoyancy Service Life Allowances.

# MISSION

Navy commanders will use DDG 51 Flight III destroyers to provide joint battlespace threat awareness and defense capability to counter current and future threats in support of:

- Integrated Air and Missile Defense
- Surface Warfare
- Anti-Submarine Warfare
- Strike Warfare

## PROGRAM

DDG 51 Flight III, an Acquisition Category IC program, will be the fourth major configuration in the DDG 51-class program acquisition cycle. The Navy accepted delivery of DDG 51 Flight III lead ship, USS *Jack H. Lucas* (DDG 125), in June 2023. DDG 51 is in fullrate production with ships from the following configurations:

- Flight I: 21 ships delivered (DDG 51 - 71)
- Flight II: 7 ships delivered (DDG 72 - 78)
- Flight IIA: 45 ships delivered (DDG 79 - 123)
   2 ships under construction (DDG 124 and 127)
- Flight III: 1 ship delivered (DDG 125)
  10 ships under construction (DDG 126, 128 – 136)
  13 ships on contract (DDG 137 – 149)

DOT&E approved a combined TEMP describing the testing strategy for DDG 51 Flight III, AWS Baseline 10, and AN/SPY-6(V)1 in September 2022. Included in the TEMP was an LFT&E Strategy that focuses on evaluation of susceptibility, vulnerability, recoverability, and force protection against threats likely to be encountered in combat. The LFT&E Strategy includes a combination of surrogate testing, survivability modeling and simulation (M&S), and at-sea testing. Included in the at-sea testing is a two-shot Full Ship Shock Trial scheduled for FY26. DDG 51 Flight III IOT&E commenced in March 2024.

#### » MAJOR CONTRACTORS

- Bath Iron Works, a subsidiary of General Dynamics Corporation – Bath, Maine
- HII Pascagoula, Mississippi

# **TEST ADEQUACY**

In March 2024, USS Jack H. Lucas (DDG 125) participated in FTM-32, an integrated test to demonstrate the capability to detect, track, engage, and intercept a mediumrange ballistic missile target utilizing a simulated Standard Missile-6 (SM-6). This event is detailed in the classified DOT&E FY24 Missile Defense System Annual Assessment, that will be published in 2QFY25. Significant intended data collection on DDG 51 Flight III's performance were not attained during test execution due to challenges with the ship's ACS and AN/SPY-6(V)1 during test execution. As a result, insufficient data are available to assess DDG 51 Flight III operational effectiveness from this flight test.

Evaluation of DDG 51 Flight III capability to defeat incoming threat anti-ship cruise missiles is constrained by available aerial test targets, or threat surrogates, that do not fully emulate the most stressing threats. Aerial targets provide demonstration of warship capability in the represented scenario and provide validation data to accredit M&S and estimate capability beyond the limited live test scenarios.

In October 2023, the Navy commenced blast fragility testing at Aberdeen Proving Ground in Aberdeen, Maryland. Testing was completed in accordance with the DOT&E-approved test plan and observed by DOT&E. The first series of tests evaluated the blast resistance of representative electrical equipment and provided data to set equipment fragility thresholds within survivability M&S. The Navy expects the second series of test to evaluate the blast resistance of Navy Standard doors and hatches to complete in FY25 and enable the setting of their thresholds with survivability M&S.

## PERFORMANCE

#### » EFFECTIVENESS, SUITABILITY, AND SURVIVABILITY

No data are available to determine DDG 51 Flight III operational effectiveness, suitability, and survivability. DOT&E will report on the operational effectiveness, suitability, and survivability of DDG 51 Flight III after IOT&E and LFT&E are complete, currently expected by the Navy to be FY28.

### RECOMMENDATIONS

The Navy should:

- Fund development and procure aerial anti-ship cruise missile targets that emulate advanced and stressing threat ASCMs.
- Determine and correct issues that limited evaluation of DDG 51 Flight III performance in FTM-32.