

Trident II (D-5) Sea-Launched Ballistic Missile – Life Extension Program Variant



The Navy completed IOT&E for the Trident-II (D-5) Life Extension Program (LEP) in June 2022, flying a total of 23 missiles. Preliminary assessments indicate that the Trident-II (D-5) life extension variant remains operationally effective and suitable. DOT&E will submit the IOT&E report in FY23.

SYSTEM DESCRIPTION

The Trident II (D-5) delivers nuclear warheads using a three-

stage, solid propellant rocket and inertial guidance aided by a stellar sighting. The Navy plans for the Trident II (D-5) to be available through at least 2042, and developed the LEP

modifications to provide missile component refresh, including an updated guidance system and flight control electronics.

MISSION

The submarine-launched Trident II (D-5) supports the sea-based leg of the U.S. nuclear triad. The Navy deploys the Trident II (D-5) from nuclear ballistic submarines, ensuring the weapon's survivability and availability. The Trident II (D-5) is a primary means of deterring nuclear attacks on the United States and its allies. In the event deterrence fails, the Trident II (D-5) is able to attack the entire range of enemy targets and help terminate the conflict on terms favorable to the United States.

PROGRAM

The Trident II (D-5) is an Acquisition Category IC program. The Navy initially deployed the D-5 life extension missiles in 2017 and expects to complete deployment in 2024. DOT&E approved a Trident II (D-5) LEP Test and Evaluation Plan and Strategy in 2015 as an update to the Test and Evaluation Master Plan.

» MAJOR CONTRACTORS

- Lockheed Martin Space
– Titusville, Florida

- Charles Stark Draper
Laboratory – Cambridge,
Massachusetts

TEST ADEQUACY

In June 2022, the Navy completed the IOT&E flight test program for the LEP variant of the Trident II (D-5) missile. DOT&E observed these tests, and they were conducted per the DOT&E approved test plan. The Navy conducted 23 flights of the LEP variant between 2018 and 2022 in accordance with DOT&E-approved flight test support plans. Tests were adequate to determine operational effectiveness and suitability.

PERFORMANCE

» EFFECTIVENESS

Analysis of the final six flight tests is in progress. Completed analysis of the previous 17 flights and the preliminary assessment of the final 6 flights suggest that the LEP variant of the Trident II (D-5) missile remains operationally effective. DOT&E will provide a final determination of operational effectiveness in an IOT&E report in FY23.

» SUITABILITY

As previously identified, analysis of the final flight tests remains in progress, and the completed analysis of the previous 17 flights and preliminary assessment of the final 6 flights suggest that the LEP variant of the Trident II (D-5) missile remains operationally suitable. DOT&E will provide a final determination of operational suitability in the FY23 IOT&E report.

» SURVIVABILITY

DOT&E monitors the cyber survivability of Trident II (D-5) through annual reviews of the system's cyber postures and understanding current threats and the program's processes to proactively manage cyber improvements. DOT&E will detail the program's cyber survivability posture in the FY23 IOT&E report.

RECOMMENDATIONS

Once analysis is completed, DOT&E will provide recommendations in the FY23 IOT&E report.