

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



The Navy's Strategic Systems Program (SSP) Office concluded operational test for the Trident-II (D-5) Life Extension Program (LEP) following 23 missile flights between 2018 and 2022. In July 2023, DOT&E submitted the IOT&E report that states the Trident-II (D-5) remains operationally effective and suitable with the LEP modifications.

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 by the inertial measurement unit. LEP modifications provide missile component refresh, including an

updated guidance system and flight control electronics. The Navy plans for the Trident II (D-5) to be available through at least 2042.

MISSION

The Navy deploys the Trident II (D-5) aboard nuclear ballistic missile submarines as the sea-based leg of the U.S. nuclear triad. 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) can attack the entire range of enemy targets and supports termination of 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 Trident II (D-5) with LEP modifications 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. The Navy executes a Follow-on Commander's Evaluation Test program that conducts additional Trident II (D-5) flight tests each year to monitor missile reliability and performance.

» MAJOR CONTRACTORS

- Lockheed Martin Space Systems – Titusville, Florida
- Charles Stark Draper Laboratory – Cambridge, Massachusetts

TEST ADEQUACY

The Navy's SSP Office concluded operational testing following 23 flights of the Trident II (D5) LEP missiles between 2018 and 2022. Missile flights were in accordance with DOT&E-approved flight test support plans and were adequate to determine operational effectiveness and suitability. DOT&E submitted an IOT&E report in July 2023.

PERFORMANCE

» EFFECTIVENESS

Trident II (D-5) remains operationally effective with the LEP modifications. Classified details are in the DOT&E IOT&E report.

» SUITABILITY

Trident II (D-5) remains operationally suitable with the LEP modifications. Trident II (D-5) showed no degradation in missile reliability or availability. Classified details are in the DOT&E IOT&E report.

» SURVIVABILITY

DOT&E will continue to monitor the cyber survivability of Trident II (D-5) through annual reviews of the system's cyber postures and the program's processes to manage cyber improvements against current and future threats.

RECOMMENDATIONS

The Navy should:

1. Use its Follow-on Commander's Evaluation Test program to further characterize Trident II (D-5) performance throughout the operational space.
2. Address classified recommendations in the IOT&E report.