

Standard Missile 2 (SM-2) Block IIIC and Block IIICU



In FY23, the Navy completed a quick reaction assessment (QRA) to provide an operational demonstration of the Standard Missile 2 (SM-2) Block IIIC prototype. In addition to the live missile firing event reported in the FY22 Annual Report, the Navy completed a modeling and simulation (M&S) study and cyber tabletop assessment. Analysis is in progress and DOT&E plans to deliver an early fielding report (EFR) for SM-2 Block IIIC in 2QFY24 to support a fielding decision in the same quarter. The Navy plans IOT&E of the next missile variant, SM-2 Block IIICU, in FY27.

SYSTEM DESCRIPTION

The SM-2 Block IIIC and Block IIICU are medium-range, surface-to-air missiles with active radio

frequency seekers. Both missiles are modifications to legacy SM-2 Block III/IIIA/IIIB missiles. The most significant modification is replacement of the legacy semi-active missile seeker with a dual-mode semi-active and active

missile seeker based on SM-6 Block I technology. The SM-2 Block IIIC and Block IIICU additionally have a new dorsal fin design and a thrust vectoring jet tab assembly to control trajectory as the missile egresses the launcher.

The Navy's Guidance Section Electronics Unit (GS EU) replacement program is making hardware changes to the SM-6 Block IA Guidance Section and Target Detection Device to address obsolescence issues. The upgraded GS EU will be qualified on the SM-6 Block IA missile as the SM-6 Block IAU. Integration of the upgraded GS EU on the SM-2 Block IIC results in the SM-2 Block IICU.

MISSION

The joint force commander will use SM-2 Block IIC and Block IICU missiles from *Arleigh Burke*-class and *Constellation*-class ships to provide medium-range air defense, both self-defense and area air defense, against anti-ship cruise missiles and tactical aircraft. The joint force commander will use SM-2 Block IIC and Block IICU missiles in Naval Integrated Fire Control – Counter Air engagements from ships with this capability.

PROGRAM

The SM-2 Block IIC was developed as a Middle Tier of Acquisition program for rapid prototyping. The Navy declared interim capability for SM-2 Block IIC in November 2022 and expects to field the missile in 2QFY24.

The Navy declared SM-2 Block IICU an Acquisition Category II program on the major capability acquisition pathway in an acquisition decision memorandum in April 2022, pending acquisition program baseline approval,

anticipated in 1QFY25. The program was approved to enter at Milestone B in April 2023, also pending the acquisition program baseline approval. DOT&E approved the SM-2 Block IICU Milestone B Test and Evaluation Master Plan (TEMP) in 1QFY24.

» MAJOR CONTRACTOR

- Raytheon, a subsidiary of RTX (formerly Raytheon Technologies)
 - Tucson, Arizona

TEST ADEQUACY

In February 2023, the Navy completed an M&S study and the Navy's Operational Test Force (OPTEVFOR) conducted a cyber tabletop assessment of the SM-2 Block IIC. These evaluations were conducted as part of a QRA to inform SM-2 Block IIC fielding and supplement the live missile firing event reported in the FY22 Annual Report. OPTEVFOR intends to accredit the M&S for operational assessment in 1QFY24. The cyber tabletop will inform cyber threat vectors and areas of focus for future cyber vulnerability assessment but is not sufficient to determine cyber vulnerability of the SM-2 Block IIC. DOT&E expects to complete review of the OPTEVFOR cyber vulnerability assessment and the Navy's M&S study of SM-2 Block IIC in 1QFY24.

DOT&E deferred the EFR for SM-2 Block IIC identified in the FY22 Annual Report. DOT&E will submit this report in 2QFY24 to include

additional analysis from the cyber tabletop evaluation and M&S study conducted in FY23 and inform the Navy's planned fielding decision in the same quarter. Test were intended to demonstrate limited capability of the SM-2 Block IIC prototype but not to determine operational effectiveness, suitability, or cyber survivability.

No SM-2 Block IICU operational testing has occurred. SM-2 Block IICU IOT&E is planned for FY27. The Navy is in development of the SM-2 Block IICU Milestone C TEMP.

There are no changes to the legacy warhead or fusing method used on the SM-2 Block IIC and Block IICU missile. However, the packaging of the warhead within a modified airframe may affect the missile's lethality and should be assessed by the Navy with analysis provided to DOT&E.

PERFORMANCE

» EFFECTIVENESS, SUITABILITY, AND SURVIVABILITY

No assessments of operational effectiveness, suitability, or cyber survivability of SM-2 Block IIC are available due to ongoing analysis. DOT&E will submit a classified EFR of SM-2 Block IIC in 2QFY24.

» LETHALITY

No data are available to assess potential changes in lethality of the SM-2 Block IIC and Block

IICU missiles from the legacy
SM-2 Block III and IIIA missiles.

RECOMMENDATION

The Navy should:

1. Assess the effect of missile airframe modifications on SM-2 Block IICU lethality and provide associated analysis to DOT&E.