Advanced Anti-Radiation Guided Missile – Extended Range (AARGM-ER)

The Navy conducted Two Advanced Anti-Radiation Guided Missile – Extended Range (AARGM-ER) developmental free-flight tests from F/A-18E/Fs in January 2022 (Developmental Test 2 (DT2)) and April 2022 (DT3). The AARGM-ER IOT&E is scheduled to begin in 3QFY23, following the final three DT shots (DT4, DT5 and DT6).

SYSTEM DESCRIPTION

The AARGM-ER is an air-to-ground missile designed to be employed by the F/A-18E/F, EA-18G, and F-35A/C to passively detect and guide on radio frequency emissions from a threat radar site and then transition to an active millimeter-wave terminal radar seeker to detect, track, and suppress and/or destroy radio-frequency-enabled, surface-to-air missile systems. AARGM-ER reuses the same millimeter-wave radar as AARGM, and introduces a new warhead and a larger diameter, but shorter, rocket motor for increased range. The weapon is designed to fit in the F-35A and F-35C internal weapons bay.

MISSION

Aircrews will employ AARGM-ER to suppress and/or destroy enemy air defenses. The primary targets are relocatable, integrated air-defense radars and other targets that may utilize shutdown tactics. AARGM-ER counters enemy shutdown capability with the multi-mode seeker.

PROGRAM

AARGM-ER is an Acquisition Category IB program. DOT&E approved the AARGM-ER Milestone C Test and Evaluation Master Plan in May 2021, but required the Navy to submit an updated cybersecurity test strategy for DOT&E approval, which occurred in August 2022. The Navy held a Knowledge Point-4 program review in July 2021 that supported entry into the Production and Deployment phase and the award of the low-rate initial production contract. The AARGM-ER IOT&E is scheduled to begin in 3QFY23.

» MAJOR CONTRACTOR

- Alliant Techsystems Operations LLC, a subsidiary of Northrup Grumman Corporation – Northridge, California

TEST ADEQUACY

At the time of this report, the program has completed three of six developmental test shots (DT1 in FY21 and DT2-DT3 in FY22) intended to identify and fix problems prior to beginning integrated operational testing, in accordance with the DOT&E-approved Test and Evaluation Master Plan. The final three DT shots are anticipated in the first half FY23. All DT shots were launched from an F/A-18 at the Point Mugu Sea Range, California. After each test event, discrepancies were noted and fixes were implemented prior to the delivery of the Flight Test Vehicle for the next shot. The time necessary to analyze data, develop, and incorporate these fixes resulted in delays to Flight Test Vehicle delivery and the test schedule.

Additionally, the extended range and advanced capabilities of AARGM-ER exceed the capabilities of most test range infrastructure. As a result, range scheduling has been a challenge for the program, resulting in adjustments to the test plan and contributing further to schedule delays.

The program is using developmental test events to collect data for verification and validation (V&V) of modeling and simulation. The data collection plan assumes that the current model will successfully predict performance in future test events. If this assumption proves to be incorrect, additional test events, to include captive-carry events, may be required to complete V&V and accreditation.

The Navy conducted the first two AARGM-ER warhead arena ground testing events in the first half of FY22. Due to production delays, the remaining warhead arena test events were rescheduled for 1QFY23. DOT&E plans to observe select future test events, and will report on the adequacy of arena testing after receipt of data from all events.

PERFORMANCE

» EFFECTIVENESS, SUITABILITY, AND SURVIVABILITY

Not enough data are currently available to provide a preliminary assessment of AARGM-ER operational effectiveness, suitability, or survivability.

RECOMMENDATIONS

The Navy should:

1. Consider scheduling additional captive-carry events prior to live-fire flight test events in order to discover discrepancies prior to flight test and increase data collection to V&V of modeling and simulation.
2. Coordinate with DOT&E and the Test Resource Management Center to ensure test range infrastructure limitations are addressed.