Offensive Anti-Surface Warfare (OASuW) Increment 1

The Offensive Anti-Surface Warfare (OASuW) Increment 1 program continues the development of missile hardware and software to increase targeting capabilities as an incremental upgrade to the currently fielded air-to-ground missile (AGM)-158C Long Range Anti-Ship Missile (LRASM). In March 2021, the program began developmental flight testing of the newest variant, LRASM 1.1, in preparation for operational testing and the declaration of early operational capability scheduled for FY23. In 4QFY21, the Navy also announced the pursuit of a dual OASuW and land strike capability in a planned modification to LRASM 1.1, scheduled to reach early operational capability in 4QFY24.

System Description

AGM-158C LRASM, the weapon system for the OASuW Increment 1, is a long-range, conventional, air-to-surface, precision-standoff weapon intended to be launched from the Navy's F/A-18E/F and the Air Force's B-1B aircraft. Once launched, LRASM uses an anti-jam GPS system to guide to an initial point and then employs a radio frequency sensor and an infrared sensor to locate, identify, and provide terminal guidance to the target.

Program

The OASuW Increment 1 began as an accelerated acquisition program to procure a limited number of air-launched missiles to meet the U.S. Pacific Fleet Urgent Operational Need generated in 2008. The OASuW program leveraged the Defense Advanced Research Projects Agency LRASM initiative that was derived from the Joint Air-to-Surface Standoff Missile Extended Range. As part of the OASuW Increment 1, the Navy funded an incremental upgrade to the LRASM baseline, referred to as LRASM 1.1, to bridge the gap until an OASuW Increment 2 program of record is established.

LRASM 1.1 incorporates missile hardware and software improvements to address component obsolescence and enhance targeting capabilities. The Navy intends to field LRASM 1.1 to operational units and declare early operational capability in 1QFY23 before the last integrated test shot and the operational test phase. DOT&E approved the LRASM 1.1 Master Test Strategy in January 2020.

In 4QFY21, the Navy announced the pursuit of a modification to LRASM 1.1, initially referred to as the LRASM C-2 and expected to be designated the AGM-158C2, intended to remove certain components to reduce unit cost and provide both OASuW and land strike capability. The Navy plans to conduct an integrated test shot for LRASM C-2 in 1QFY24 and reach early operational capability in 4QFY24.

The DOD continues to plan for OASuW Increment 2, with initial operational capability anticipated in FY28-30, intended to deliver long-term anti-surface warfare capabilities to counter future threats.

Major Contractor

Lockheed Martin Missiles and Fire Control – Orlando, Florida.

Test Adequacy

Developmental flight testing of LRASM 1.1 components on a Sabreliner flying test bed began in March 2021 and is scheduled to continue through January 2022. Integrated testing, scheduled to be executed from 2022 through 2023, will include test shots with inert warheads from F/A-18E/F aircraft at ship targets and modeling and simulation (M&S)-based testing. Operational testing scheduled for 2024 will include shots (including one with a live warhead), an M&S-based test event, and cybersecurity operational test events using a signal processor-in-the-loop lab environment. Live integrated and operational free-flight tests will provide validation data for the Navy Commander, Operational Test and Evaluation Force (COMOPTEVFOR) to accredit the M&S required to assess LRASM operational effectiveness across the operational environment. COMOPTEVFOR will complete verification, validation, and accreditation of the LRASM M&S suite by the end of IOT&E.

In 2021, the Navy conducted two sled tests of inert LRASM 1.1 warheads to assess proper function and survivability of the new Electronic Safe and Arm Fuze against representative maritime target components. Analysis is ongoing to determine if the collected data are adequate to demonstrate end-to-end warhead performance.

No LRASM C-2 operational test activity occurred in 2021. The Navy still needs to complete development of the LRASM C-2 requirements and concept of operations, as well an adequate OT&E plan to support their planned early operational capability declaration in 4QFY24 and a subsequent full-rate production decision. The Navy needs to ensure adequate M&S resources are available to develop and test the new LRASM C-2 land strike capability.

Performance

Not enough data are currently available to provide a preliminary assessment of LRASM operational effectiveness, lethality, suitability, and survivability. Developmental flight testing in 2021 provided data that will be used to improve targeting algorithms, which are likely to have the greatest effect on missile performance for both LRASM 1.1 and LRASM C-2.

Recommendations

The Navy should:

1. Complete the development and validation of the M&S environment to facilitate the operational effectiveness evaluation of LRASM 1.1.
2. Plan and execute an adequate LRASM C-2 OT&E to support the full-rate production decision.
3. Ensure adequate LRASM 1.1 M&S resources remain when LRASM C-2 M&S operational testing requirements are established.
4. Demonstrate end-to-end performance of the Electronic Safe and Arm Fuze, including the detonation of a warhead against a representative target as a risk reduction event prior to, or in conjunction with, the Operational Test Event (OTE-2) lethality demonstration identified in the Master Test Strategy.