

Offensive Anti-Surface Warfare (OASuW) Increment 1

Executive Summary

- The Navy completed a Quick Reaction Assessment (QRA) of the Offensive Anti-Surface Warfare (OASuW) Increment 1 program for weapon employment on the B-1B aircraft in FY18 and intends to complete a QRA for the F/A-18E/F aircraft in FY19.
- The OASuW Increment 1 program conducted limited testing in FY18 with partially successful results. Accrediting the modeling and simulation (M&S) environment to determine long-range anti-ship missile (LRASM) operational performance is at risk.
- During Integrated Test Events (ITEs) 1, 2/4, 3, 5, and 6B, the LRASM, employed from a B-1B aircraft, successfully engaged the mobile ship target with limitations.

System

- The OASuW Increment 1 program is the first program in an incremental approach to produce an OASuW capability in response to a U.S. Pacific Fleet Urgent Operational Need generated in 2008.
- The OASuW Increment 1 is an accelerated acquisition program to procure a limited number of air-launched missiles to meet a near-term U.S. Pacific Fleet capability gap in 2018 by leveraging the Defense Advanced Research Projects Agency (DARPA) LRASM.
- LRASM, the weapon system for the OASuW Increment 1, is a 2,400-pound, long-range, conventional, air-to-surface, precision standoff missile. The Navy's F/A-18E/F or the Air Force's B-1B aircraft will launch LRASM.
- LRASM, designated the AGM-158C, is derived from the Joint Air-to-Surface Standoff Missile Extended Range (JASSM-ER) and will use the same 1,000-pound penetrator/blast fragmentation warhead. An anti-jam GPS guidance system, radio frequency sensor (RFS), and an infrared sensor support guidance and targeting.
- Once launched against a target ship, LRASM guides to an initial point and employs onboard sensors to locate, identify, and provide terminal guidance to the selected aimpoint on the



target. LRASM is designed to operate individually or as part of a salvo.

- OASuW Increment 2 is required to deliver the long-term, air-launched anti-surface warfare (ASuW) capabilities to counter 2028 threats (and beyond). The Department continues to plan for OASuW Increment 2 to be developed via full and open competition. To inform the long-term path forward, the Navy will leverage Next Generation Land Attack Weapon (NGLAW) Analysis of Alternatives results to inform the required ASuW capabilities. Due to Increment 2 budget marks, the Navy planned an incremental upgrade to LRASM to bridge the gap until an OASuW Increment 2 program of record can be established. Increment 2 Initial Operational Capability is now planned for the FY28-30 timeframe.

Mission

Combatant Commanders will use units equipped with LRASM to destroy high-value, well-defended ships from standoff ranges.

Major Contractor

Lockheed Martin Missiles and Fire Control – Orlando, Florida

Activity

- The Navy and Air Force conducted testing in FY18 in accordance with the DOT&E-approved Master Test Strategy and QRA test plan.
- The Navy and Air Force conducted flight testing and end-to-end M&S runs of the LRASM system in FY18.
- The Navy and Air Force conducted six free-flight test events of LRASM, four flights with a single missile, and two flights with two-missile salvos launched from a B-1B. Flight testing for the QRA on F/A-18E/F aircraft will continue into FY19.
- The Navy completed Integrated Test Event for M&S 3 (ITEM 3) in August 2018, which is the QRA run-for-record M&S test using the Kill Chain Testbed (KCT).
- The Navy began developmental cybersecurity testing in July 2018. Additional developmental cyber testing will occur in FY19 with updated LRASM hardware and software after an update to the Signal Processor-In-the-Loop (SPIL) simulation environment has been completed.

FY18 NAVY PROGRAMS

- The Air Force and Navy completed captive carry events on a B-1B and F/A-18 aircraft to evaluate weapon integration in FY18.
- In FY16, the Navy completed the sled tests to demonstrate warhead fuze functionality of the weapon against intended ship targets. Analysis to characterize the lethal effects on the target as a function of weapon hit location was completed in FY18 using the Advanced Survivability Assessment Program. These damage predictions were then used by the KCT to evaluate damage from specific, operationally representative, weapon engagements.
- The Navy completed a QRA of the OASuW Increment 1 program and declared Early Operational Capability (EOC) for weapon employment on the B-1B aircraft in October 2018 and plan to do the same for the F/A-18E/F aircraft in FY19. DOT&E delivered an Early Fielding Report on the B-1B EOC decision in September 2018, and intends to do the same for the F/A-18E/F in FY19.
- The Navy started planning in August 2018 for a future IOT&E of a Lot 4-configured LRASM.
- Lethality evaluation of the LRASM has been completed and summarized in the classified Quick Reaction Assessment Early Fielding Report, published by DOT&E in September 2018.
- Accrediting the M&S environment to determine LRASM operational performance is at risk due to difficulties in correctly modeling RFS performance and lack of validated models. The M&S environment is required to validate Key Performance Parameter achievement in this program. Further details are classified.
- The OASuW Increment 1 program continued development of missile software based on lessons learned from ITEs with B-1B aircraft, and plans further software development for ITEs with the F/A-18E/F.
- Developmental cybersecurity testing revealed areas for improvement.

Assessment

- The OASuW Increment 1 program conducted limited testing in FY18, including ITEs with the B-1B and developmental cybersecurity testing in the SPIL simulation environment, with partially successful results.

Recommendations

The Navy should:

1. Accomplish cybersecurity testing of the weapon system in accordance with a DOT&E-approved cybersecurity test plan.
2. Complete remaining ITEs with operationally representative hardware and software configurations.
3. Plan and complete IOT&E for LRASM in accordance with FY19 congressional direction.