

AIM-9X Air-to-Air Missile Upgrade Block II

Executive Summary

- The Navy and the Air Force executed FOT&E of the AIM-9X Block II missile, with the Operational Flight Software (OFS) 9.410, from May 2020 until November 2020. FOT&E included six scored missile launches; captive-carry testing to examine acquisition, tracking, and reliability; and modeling and simulation (M&S).
- The Captive Carry Reliability Program (CCRP) provided the data needed to evaluate if the suitability deficiency of AIM-9X Block II employed by the F/A-18 aircraft, identified in IOT&E, has been sufficiently addressed. CCRP also provided the data to confirm that the suitability of the AIM-9X, employed by F-15 and F-16 aircraft, demonstrated in IOT&E, has been maintained.
- The Navy and the Air Force started a joint cybersecurity test for AIM-9X Block II and AIM-120C/, independent of FOT&E, although testing was postponed until December 2020 due to the delivery delays of the integration build weapon software.
- In FY20, the Program Office initiated the AIM-9X lethality evaluation against an updated target set which includes a range of fixed-wing aircraft, rotorcraft, unmanned aerial vehicles, and ground targets. The Program Office expects to complete the lethality assessment in 1QFY21.

System

- AIM-9X is the latest-generation, short-range, infrared-tracking, air-to-air missile. It is highly maneuverable and day/night capable.
- The AIM-9X threshold platforms are the F-15C/D and the F/A-18A+/C/D/E/F aircraft. Objective aircraft are the F-16C/D, EA-18G, F-15E, F-22A, and F-35A/B/C.
- The Assistant Secretary of the Navy (Research, Development, and Acquisition) approved full-rate production of the AIM-9X Block II missile via an Acquisition Decision Memorandum dated August 17, 2015.
- AIM-9X Block II missiles are currently fielded with OFS 9.317, which includes datalink, lofted trajectories, full cue lock-on-after-launch capability, and improved high-off boresight capability and flare rejection.

Activity

- The Navy and Air Force conducted the operational and cybersecurity testing, and lethality M&S in accordance with the DOT&E-approved Test and Evaluation Master Plan (TEMP) and LFT&E Strategy.
- AIM-9X Block II FOT&E, executed from May 2020 until November 2020, included six operational flight tests of the



- OFS 9.410 is the latest update and consists of a software-only enhancement to provide improved Infrared Counter-Countermeasures, probability of kill enhancements, and partial/degraded cueing capabilities.
- Additional preplanned hardware improvements and obsolescence upgrades include the Inertial Measuring Unit, Missile Processor Unit, Control Actuation System battery, and a Nanocomposite Optical Ceramic missile seeker dome. Planned changes to the missile hardware will not add additional mission capabilities or affect system performance.
- OFS 9.410 and the hardware improvements/obsolescence upgrades are not coupled and will be implemented independently.

Mission

Joint Service (Navy/Marine Corps and Air Force) air combat units use the AIM-9X to:

- Conduct short-range air-to-air combat
- Engage multiple enemy aircraft types with passive infrared guidance in the missile seeker
- Seek and attack enemy aircraft at large angles away from the heading of the launch aircraft

Major Contractor

Raytheon Missiles & Defense – Tucson, Arizona

- AIM-9X Block II with OFS 9.410, captive carry testing, and M&S runs.
- In May 2020, the Accreditation Review Panel members signed the Raytheon M&S Acceptability Assessment Report.
- In FY20, the Navy and Air Force started the joint cybersecurity test for AIM-9X Block II and AIM-120C/D,

FY20 NAVY PROGRAMS

independent of the FOT&E, and will complete testing in December 2020 when Raytheon expects to deliver the integration build weapon software.

- In FY20, the Program Office initiated the M&S of AIM-9X against an updated target set which includes a range of fixed-wing aircraft, rotary-wing aircraft, unmanned aerial vehicles, and ground targets.

Assessment

- The AIM-9X Block II, with OFS 9.410, FOT&E is expected to complete in 1QFY21.
 - Initial indications suggest AIM-9X Block II 9.410 is effective. In flight tests, five of the six missile launches achieved a lethal intercept, and captive-carry testing demonstrated that the weapon is meeting the acquisition and tracking performance requirements.
 - Suitability data collected to date indicate that the AIM-9X Block II 9.410 will meet the suitability requirements, as employed by the F-15 and F-16 aircraft.

- The collected suitability data will be used to evaluate if the suitability deficiency of AIM-9X Block II employed by the F/A-18 aircraft, identified in IOT&E, has been sufficiently addressed.

- Cybersecurity testing is focused on the weapon OFS, host platform 1553 bus connection, missile datalink, Munitions Application Program software, and Common Munitions BIT/Reprogramming Equipment support. Final analysis and a report will be delivered after the completion of the cybersecurity testing.
- AIM-9X lethality evaluation against eight air and ground targets is on track and scheduled to be completed in 1QFY21.

Recommendation

1. The Services should complete cybersecurity testing on the AIM-9X in accordance with the Cybersecurity Test Plan approved by DOT&E on September 9, 2019.