

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

The Navy fielded the Air Intercept Missile (AIM)-9X Block II with Operational Flight Software (OFS) 9.411 in September 2021 after successfully demonstrating its operational effectiveness and suitability in FOT&E. AIM-9X Block II OFS 9.411 met or exceeded the probability of acquisition and probability of kill requirements, demonstrating improved performance in the presence of infrared countermeasures. The survivability assessment of the AIM-9X Block II OFS 9.411 in a cyber-contested environment is ongoing.



System Description

The AIM-9X Block II is the latest generation short-range, infrared-tracking, air-to-air missile. Highly maneuverable and day and night capable, the AIM-9X threshold requirement platforms are the F-15C/D and the F/A-18A+/C/D/E/F aircraft. Objective requirement aircraft are the F-16C/D, EA-18G, F-15E, F-22A and F-35A/B/C.

OFS 9.411 is the latest AIM-9X Block II update and consists of a software-only enhancement providing new and improved algorithms intended to improve probability of kill and performance in the presence of infrared countermeasures. Future improvements to AIM-9X Block II include additional pre-planned hardware improvements and obsolescence upgrades.

Program

The AIM-9X Block II is an Acquisition Category IC program. DOT&E approved the OFS 9.4 revision of the Test and Evaluation Master Plan in April 2020. The Navy's Operational Test and Evaluation Force (OPTEVFOR) completed AIM-9X Block II OFS 9.410 FOT&E in January 2021 supporting the fielding decision of the AIM-9X Block II missiles with OFS 9.411. OFS 9.410 and 9.411 are functionally the same software with the same missile capabilities. OFS 9.411 is the fielded version.

Major Contractor

Raytheon Missiles and Defense – Tucson, Arizona.

Test Adequacy

Operational and live fire testing of the AIM-9X Block II missile with 9.410 OFS was adequate to support the evaluation of the operational effectiveness, lethality, and suitability of the AIM-9X. Testing was conducted in accordance with the DOT&E-approved test plan.

AIM-9X Block II OFS 9.410 FOT&E consisted of 20 AIM-9X live-missile firing attempts, 7,170 modeling and simulation (M&S) runs, and 561 captive-carry sorties including 1,095 Captive Carry Reliability Program hours. OPTEVFOR accredited the AIM-9X digital M&S in May 2021.

Assessment of warhead lethality occurred between 2001 and 2003 during Block I testing. LFT&E is also conducting supplementary M&S runs to assess eight additional target types, and results of these analyses will be reported at the end of 2021. DOT&E will determine test adequacy of these activities at their conclusion. OPTEVFOR completed cybersecurity testing in the summer of 2021, and reporting is expected in early 2022.

Performance

Effectiveness

AIM-9X Block II with 9.410 OFS is operationally effective, meeting or exceeding the probability of

acquisition and probability of kill requirements. Details are provided in the classified AIM-9X Block II 9.410 OFS FOT&E report published in September 2021.

Suitability

AIM-9X Block II with 9.410 OFS is operationally suitable on F-15, F-16, and F/A-18 aircraft. Mean time between captive-carry failure has improved for all three aircraft, especially the F/A-18, which was rated operationally unsuitable in 2015.

Survivability

Further information on AIM-9X Block II 9.411 cybersecurity survivability will be documented in the classified report on AIM-9X cybersecurity, which will be released in 2022.

Recommendation

1. The Services should complete lethality and cybersecurity testing and consider the two additional recommendations detailed in the classified AIM-9X Block II OFS 9.410 FOT&E report published in September 2021.