

AIM-9X Air-to-Air Missile Upgrade

Executive Summary

- The Navy requested to re-baseline the AIM-9X program as a result of Service funding, cost, and schedule overruns. The USD(AT&L) classified AIM-9X Block II (or AIM-9X-2 hardware with version 9.3 software) as a new program entering a pre-Milestone C decision.
- Operational testing during FY11 assessed the AIM-9X-2 missile with Operational Flight Software (OFS) 9.2 and 9.3. The Services have not yet produced their final report. Preliminary results show four of five hits during live flight testing and nominal performance during captive-carry events.
- DOT&E signed and approved the AIM-9X Block II Test and Evaluation Master Plan (TEMP) in support of the June 2011 Milestone C decision. The Operational Test Readiness Review (OTRR) is scheduled for April 2012 for IOT&E of the Block II.

System

- AIM-9X is the latest generation short-range, heat-seeking, air-to-air missile. The currently fielded version of the missile is AIM-9X Block I, OFS 8.212, which includes limited lock-on-after-launch, full envelope off-boresight capability without a helmet-mounted cueing system, and improved flare rejection performance.
- AIM-9X is highly maneuverable, day/night capable, and includes the warhead, fuze, and rocket motor from the previous AIM-9M missile.
- AIM-9X added a new imaging infrared seeker, vector-controlled thrust, digital processor, and autopilot.
- F-15C/D, F-16C/D, and F/A-18C-F aircraft can carry the AIM-9X, and the missile includes a container for storage and maintenance.
- The AIM-9X Block II is the combination of AIM-9X-2 hardware and OFS 9.3 software.
- AIM-9X-2 is the latest hardware version and is designed to prevent parts obsolescence and provide processing capability for the upcoming OFS 9.3 software upgrade. The AIM-9X-2 missile includes a new processor, a new ignition battery for the rocket motor, an electronic ignition safety/arm device,



and the DSU-41/B Active Optical Target Detector (AOTD) fuze/datalink assembly.

- AIM-9X-2 with OFS 9.2 provides similar capabilities as the currently fielded AIM-9X Block I, OFS 8.212.
- OFS 9.3 is a software upgrade that will add trajectory management to improve range, datalink with the launching aircraft, improved lock-on-after-launch, target re-acquisition, and improved fuzing.

Mission

Air combat units use the AIM-9X to:

- Conduct short-range offensive and defensive 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 heading of the launch aircraft.

Major Contractor

Raytheon Missile Systems – Tucson, Arizona

Activity

- The Navy completed AIM-9X-2 with OFS 9.2 operational testing in January 2011. The Navy's Commander, Operational Test and Evaluation Force and Air Force Operational Test and Evaluation Center flew captive-carry missions using the F-18 aircraft at the Naval Air Weapons Center, China Lake, California, and using the F-15/F-16 aircraft at Eglin AFB, Florida. The testing supported a decision to field captive air training missiles.
- The USD(AT&L) made the decision to re-baseline the program and classify it as a new program entering a pre-Milestone C decision. The new program is designated AIM-9X Block II, which combines AIM-9X-2 hardware with OFS 9.3. This decision was primarily driven by a cost per unit increase due to the new DSU-41/B AOTD fuze/datalink assembly, reductions in Service funding, software costs, and schedule delays.

NAVY PROGRAMS

- The AIM-9X-2, OFS 9.3 development and test schedule overlapped with the AIM-9X-2, OFS 9.2 tests. The Navy and Air Force cancelled the OFS 9.2 missile fielding in favor of OFS 9.3.
- The Joint Requirements Oversight Council signed the Block II Capability Production Document in May 2011. DOT&E signed and approved the AIM-9X Block II Milestone C TEMP in June 2011. The TEMP outlined 4 integrated test events, 17 live fire events, and 61 captive-carry missions.
- After TEMP approval, the Navy completed two of seven AIM-9X-2, OFS 9.3 shots (developmental test and developmental/operational test) required before the April 2012 OTRR.
- After the operational assessment, mean time between critical failure was 470 hours. The Navy plans to complete 6,500 hours of captive-carry reliability testing by the end of IOT&E; the Capability Production Document requires 500 hours mean time between critical failure.
- Recent captive-carry testing has revealed declining missile reliability due to communication problems in 9.303 software and host aircraft compatibility deficiencies. The program office plans to fix these deficiencies, along with software changes in OFS 9.308. Raytheon plans another software build prior to the OTRR.
- The program office plans to execute an AIM-9X-2, OFS 9.3 OTRR in April 2012. The schedule of live fire events required before the OTRR is aggressive; the Navy and Air Force must execute five more live flight tests prior to the OTRR. Testing delays could result in a delayed OTRR.

Assessment

- The operational assessment of AIM-9X-2 with OFS 9.3, which the Navy completed in March through April 2011, consisted of five live missile shots (including four developmental test missile shots) and nine captive-carry sorties performed by F-15 and F/A-18 aircraft. At the time of this annual report, the Services had not yet completed their final report. The Services completed an Initial Impressions Report in support of the late June Milestone C decision.
- Initial AIM-9X-2 OA results indicate hits on four of five live fires and nominal performance on all captive-carry missions. Captive-carry data indicate the system is meeting its requirements, but statistical significance is low.

Recommendations

- Status of Previous Recommendations. The Navy satisfactorily addressed previous annual report recommendations.
- FY11 Recommendations. The Navy should:
 1. Ensure progression to IOT&E is event-driven, not schedule-driven or tied to a specific date, such as April 2012.
 2. Require adequate testing and developmental test completion before progressing to operational testing.