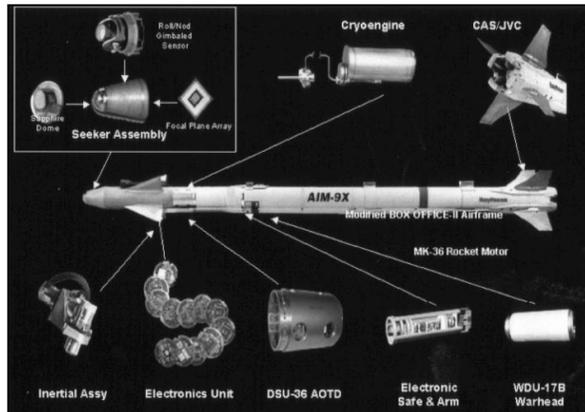


AIM-120 AMRAAM



AIM-120 is an all weather, radar guided, air-to-air missile with launch-and-leave capability in both the beyond-visual-range and within-visual-range arenas, enabling a single aircraft to simultaneously engage multiple targets with multiple missiles. The U.S. Air Force and Navy, as well as several foreign military forces use the AIM-120. Currently employed by the F-15C, F-15E, F-16, and F/A-18C/D, AIM-120 will also be employed by the F/A-18E/F, F-22, and the Joint Strike Fighter.

The AIM-120C was developed to reduce its box size from 17.4 to 12.5 inches. This allowed for increased internal carriage in the F-22. Lethality improvements are being incorporated into the missile from Lot 8 and beyond, culminating in a new warhead in Lot 11 and lengthened rocket motor in Lot 12. All current U.S. deliveries are of the AIM-120C configuration.

The AMRAAM Pre-Planned Product Improvement (P3I) Phase 3 development program is underway. The Phase 3 missile will include new guidance section hardware and software. The antenna, receiver, and signal processing portions of the system are being upgraded to handle the requirements to counter new threats, and will be compressed to create room for future growth. Some existing software will be re-hosted to a new Higher Order Language (C++), some existing software will be re-hosted and modified to function with the new hardware, and some additional software algorithms are being written to react to the new Phase 3 threats.

BACKGROUND INFORMATION

The AMRAAM program entered FSD in September 1982 and entered full-rate production (Milestone III) in April 1992. FOT&Es were completed in May 1993 and December 1995. This testing included the launch of 40 missiles under various test conditions and continued the captive-carry reliability program (CCRP) testing. Twenty-four of the live launches were missiles from CCRP inventory. The live shots were designed to evaluate missile end game performance against advanced ECM threats and warhead lethality in more challenging end game scenarios.

Another FOT&E was started in 1996. This was a joint Air Force and Navy evaluation emphasizing testing of lethality improvements in missiles from Lot 8 and higher, culminating with the new warhead in Lot 11 and rocket motor in Lot 12. The LFT&E program for the new warhead included

characterization of the new contact fuze and arena testing of the warhead. Arena tests were conducted against a cruise missile, a bomber section, and two foreign fighter targets in 1996 and 1999.

TEST & EVALUATION ACTIVITY

The TEMP is under revision to provide a comprehensive developmental and operational test and evaluation for the AMRAAM (P³I) Phase 3 Program. This missile is scheduled to begin production in Lot 16 (FY04) and will incorporate new seeker and guidance sections as well as Operational Flight Program software written in a new language. Raytheon plans thirty-eight captive carry missions and eight DT&E missile launches. Based on current system reliability exceeding the ORD requirement and a decision to rely on contractor controls over production, including reliability acceptance testing and environmental stress screening, no captive carry reliability program is planned. An OT&E will follow using the first Phase 3 production missiles. The Air Force's Air Combat Command and Navy's Air Test and Evaluation Squadron will conduct the test under AFOTEC and COMOPTEVFOR oversight. Significant attention has been given to the process for accrediting modeling and simulation for use in the OT&E. DOT&E highlighted concerns with the model and its use in OT&E to the program staff and the operational test agencies. Technical issues remain and final scoping of the OT&E awaits resolution of these issues. The TEMP has been submitted to OSD for approval.

TEST & EVALUATION ASSESSMENT

The Phase 3 P3I missile is largely a new missile with distinct capabilities from predecessor variants of the AIM-120. Hardware and software changes in the guidance section are significant. An adequate OT&E strategy to assess performance of these upgrades against requirements is evolving. At present, the Air Force and Navy jointly propose nine OT&E live fire events and a constructive model and simulation adapted from the baseline AMRAAM program. DOT&E is evaluating the proposal as presented in the draft TEMP. Adequate model components, overall operational test adequacy, and a determination that ORD required capability is tested are open issues that require resolution for TEMP approval. A potential outcome is additional cost to add characteristics to the modeling and simulation program and/or additional missile shots for OT&E.

DOT&E has completed its independent evaluation of AMRAAM LFT&E results. The Director plans to send his report to Congress in late 2001. Based on the results of three arena tests, one flight test, and other tests and simulation analyses, DOT&E found that the P3I warhead is lethal against its expected targets and that it is as lethal or more lethal than the baseline AMRAAM warhead. DOT&E also found that the AMRAAM P3I LFT&E program was adequate to evaluate the system's lethality.