AIM-9X Air-to-Air Missile Upgrade

Executive Summary

- Launcher failures on F-15 aircraft are damaging missiles faster than planned, leading to greater support costs.
- The program is planning near-term Developmental Testing (DT) and Operational Testing (OT) to implement new rudimentary air-to-ground capabilities and address shortfalls from multi-Service operational test and evaluation.
- The program plans a long-term extensive hardware and software upgrade. This effort adds greater capability to the existing missile than a preplanned product improvement and requires adequate DT and OT prior to committing to full-rate production.

System

AIM-9X is the latest generation short-range heat-seeking air-to-air missile. It is highly maneuverable and:

- Includes the warhead, fuse, and rocket motor from the previous AIM-9M missile
- Adds a new imaging infrared seeker, vector-controlled thrust, and a digital processor and autopilot
- Is carried interchangeably by F-15C/D, F/A-18 C/D, and F/A-18 E/F aircraft
- Includes a container for storage and maintenance

Mission

- Air combat units use the AIM-9X to conduct short-range offensive and defensive air-to-air combat. The AIM-9X is a day/night, highly maneuverable, launch and leave missile.

- It uses passive infrared guidance to engage multiple enemy aircraft types and uses multiple cues from aircraft systems, including radar and the Joint Helmet Mounted Cueing System.
- It seeks and attacks enemy aircraft at large angles away from the launch aircraft, and closes the gap in close combat capability between our aircraft and primary enemy threat aircraft.

Activity

- An F-15 launcher problem caused a higher-than-expected failure rate of training missiles.
- The Air Force requested a rapid, rudimentary air-to-ground capability for AIM-9X against a limited number of moving ground vehicles. The program began initial development this year, and intends to flight test and operationally test next year.
- The program is updating software to correct a launch envelope problem found during OT, improve countermeasure capabilities (both highlighted in last year's annual report), and begin the first phase of a lock-on-after-launch capability.
- AIM-9X completed DT events to support these changes. The program is planning operational testing for the updated software, air-to-ground capability, and lock-on-after-launch in FY06. The program is also planning an extensive upgrade in hardware and software for FY09.

Assessment

F/A-18 aircraft pylon problems contributed to a not suitable rating during multi-Service operational testing two years ago. The F-15 launcher creates a similar problem, leading in this case to damaged missiles and a reduced ability to employ weapons. The damaged missiles require greater maintenance or more frequent replacement, which leads to a greater cost to support and maintain AIM-9X missiles. The program office is currently pursuing solutions to the F-15 launcher problem.

The program has an adequate approach to testing and implementing the near term upgrades of software improvements, rudimentary air-to-ground capability, and the initial lock-on-after-launch capability.

For the long term, the changes being implemented are significant, and represent a new "increment." The program will follow DoD processes for updating the requirements documents, as well as planning milestones for development start, low-rate production, operational test, and full-rate production. The program should conduct adequate testing, and results from operational testing should support a production decision ("fly before buy") based on an event-driven process.

Recommendations

1. The program should correct the F-15 launcher problems as soon as possible.
2. For the near term upgrades, the program should complete development prior to OT, and then complete adequate OT to identify any issues and prove-out corrections from the previous problems. The testing also must identify and report capabilities and limitations with the newest initial capabilities (air-to-ground and lock-on-after-launch), especially since these are the first attempts and will likely need updates for the major increment planned in FY09.
3. The long term upgrades represent a new "increment" in the program. The program should plan a robust, event-driven test effort. The program should conduct an operational assessment of DT that supports a low-rate production decision, and then conduct an adequate OT that supports a full-rate production decision. The program should not proceed into full-rate production of the upgraded missile until the production approval authority receives the results of the OT.