AGM-88E Advanced Anti-Radiation Guided Missile (AARGM) Program

Executive Summary

- The AGM-88E Advanced Anti-Radiation Guided Missile (AARGM) is in its second developmental test phase. In 2008, there were two successful developmental test missile firings and two successful Operational Assessment (OA) shots.
- Commander, Operational Test and Evaluation Force (COTF) characterized the AARGM as potentially effective and potentially suitable.
- DOT&E concurs with the COTF OA conclusions that AARGM testing and performance was adequate to support a Milestone C decision in September 2008.
- Missile development continues to be delayed by hardware and software technical challenges.
- The program followed a high-risk schedule to achieve a Milestone C decision resulting in deferral of some missile capabilities.
- A surrogate target program continues with a focus on developing operationally-realistic targets. The Resource Enhancement Program (REP) is funding target development.

System

- AARGM is the follow-on to the AGM-88A/B High-Speed Anti-Radiation Missile (HARM) using a modified AGM 88A/B missile body and fins.
- The AARGM changes will incorporate Millimeter Wave (MMW), GPS, digital Anti Radiation Homing (ARH), Weapon Impact Assessment (WIA) Transmitter, and an Integrated Broadcast Service Receiver (IBS-R).
  - MMW technology allows enhanced target discrimination during terminal guidance of the weapon.
  - ARH improvements include an increased field-of-view and larger frequency range.
  - The GPS allows position accuracy in location, time, and WIA transmissions on the IBS-R.
  - The IBS-R allows reception of national broadcast data and transmittal of weapon impact assessment.

Mission

- Units equipped with AARGM conduct pre-planned, on-call, and time sensitive anti-radiation targeting for the degradation and destruction of radio frequency-enabled surface-to-air missile systems.
- Commanders use the AARGM to provide real-time weapons impact assessment via a national broadcast data system.

Prime Contractor

- Alliant-Techsystems

Activity

- The program continued developmental testing in 2008 using a contracted twin engine Beech aircraft with an AARGM seeker assembly attached to the nose of the aircraft. The Beech aircraft flew 109 flight hours of developmental test for characterization of the ARH and MMW seekers. Additionally, the Program Office provided a similar aircraft to the Italian Air Force (cooperative program partner).
- The second developmental testing phase continued, with additional lab and field testing of the ARH and MMW hardware and software, executing Beech aircraft flight tests and F/A-18C aircraft captive-carry events to continue characterization of MMW and ARH seekers. The F/A-18 Advanced Weapons Laboratory (AWL) and the AARGM contractor conducted over 1,500 hours of laboratory testing in the AARGM hardware-in-the-loop and missile chamber facilities.
- Two developmental live fire tests demonstrated GPS, ARH, and MMW capabilities in target prosecution at various ranges to the target. The F/A-18 AWL flew 96 flight hours of developmental test in preparation for the COTF OA.

- The COTF OA, conducted in accordance with the DOT&E-approved test plan, consisted of 10 captive carry sorties and two live fire missile shots. The COTF OA characterized AARGM as potentially effective and potentially suitable demonstrating the program's readiness to proceed to a Milestone C decision in September 2008.
- Representative targets do not exist for this type of weapons system. REP funding provided $4.6 Million in FY07 and $2.0 Million in FY08 for target development to support AARGM operational testing. Target development continues in parallel with AARGM developmental testing.

Assessment

- Hardware and software development challenges continue to impose a risk to the program schedule. These challenges include the hardware and software integration of MMW, GPS, and ARH technologies.
- The MMW radar sensor is better characterized, but still is somewhat immature as an emerging technology.
- Pressure to maintain the Milestone C decision in September 2008 imposed limitations on the adequacy of the OA with reference to full characterization and implementation of the MMW capability.
- DOT&E concurs with the COTF OA conclusions that AARGM testing and performance was adequate to support the September 2008 Milestone C decision.

Recommendations

- Status of Previous Recommendations. The Navy addressed one of the two FY07 recommendations. The second recommendation regarding the test program remains valid.
- FY08 Recommendations.
  1. The Operational Test Agency must ensure surrogate target development, validation, and verification are finalized before formal operational testing begins.
  2. The Navy must fully characterize the MMW and ARH sensors in developmental test prior to formal operational test ensuring it is a period of confirmation vice discovery.