

GAO

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Fact Sheet for the Honorable
Denny Smith, House of Representatives

June 1987

MISSILE PROCUREMENT

Advanced Medium Range Air-to-Air Missile Preproduction Test Results



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United States
General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

B-221734

June 2, 1987

The Honorable Denny Smith
House of Representatives

Dear Mr. Smith:

This fact sheet is in response to your May 4, 1987, request for information on recent Advanced Medium Range Air-to-Air Missile (AMRAAM) tests to demonstrate capabilities required by the Defense Appropriation Act, 1987 (P.L. 99-591).

As you know, the fiscal year 1987 Appropriation Act restricts expenditure of funds for AMRAAM's low rate initial production until certain performance capabilities have been demonstrated in flight tests. Specifically, the act states that:

"No funds may be obligated or expended for Lot 1 low-rate production of the Advanced Medium Range Air-to-Air Missile, with the exception of long-lead procurement until this missile has demonstrated, in flight test, the capability to successfully engage a minimum of two targets with two missiles on the same intercept in an electronic countermeasure environment after the missiles have been launched."

A Defense Acquisition Board meeting is scheduled for June 4, 1987, to decide whether to begin low rate production. If the Board approves, production contract options will be awarded to Hughes Aircraft Company in July 1987 and Raytheon Corporation the following month.

BACKGROUND

For fiscal year 1987, \$579.5 million was appropriated to begin low rate AMRAAM production and, in its fiscal year 1988 budget, the Air Force requested \$832.9 million for fiscal year 1988 and \$875.0 million for fiscal year 1989 AMRAAM production. A total production of 24,335 AMRAAMs is planned to meet both Air Force (17,123) and Navy (7,212) requirements. The AMRAAM Program Office currently estimates total production costs at \$7.123 billion in fiscal year 1984 dollars.

The Air Force plan, approved by the Office of the Secretary of Defense, is to begin AMRAAM production with 180 interim design missiles that will not have all of the required electronic counter-countermeasures capabilities and will not have demonstrated other full performance capabilities. The performance demonstration required by the act is to test the interim design missile.

According to the AMRAAM flight test plan, three tests were planned before contract award to demonstrate the capabilities required by the act. As of May 1, 1987, the Air Force had conducted two of the tests.

THE FIRST TEST

The first test, conducted on February 20, 1987, was not successful in meeting the requirements under the act. The test plan called for two missiles to be fired at two targets flying close together. The primary purpose of this test was to demonstrate the missiles' abilities to select and guide to their targets in an electronic countermeasure environment of chaff--small metallic strips for confusing radar-guided missiles.

In the test, one missile failed to guide to either target because the targets were close together, and one missile guided to the wrong target because of an incorrect message from the launch aircraft. According to the Program Manager, a missile software problem was identified and corrected. Two missiles with these changes were successfully tested on May 1, 1987. Further tests are planned to more fully demonstrate that the problem has been corrected. Aircraft software changes are also underway and are scheduled to be available before production missiles are delivered.

THE SECOND TEST

The second test was to be more demanding than the first. It called for two missiles to engage two targets in an electronic countermeasure environment that included a self-screening jammer on one of the two targets, a stand-off aircraft jamming the missile, and another stand-off aircraft jamming the launch aircraft's radar. This was to be the first operational test involving two missiles and two targets. Operational tests are managed by the Air Force Operational Test and Evaluation Center (AFOTEC).

Before conducting the second test, AFOTEC and the Program Office agreed to make certain changes because of difficulties in arranging the test resources. However, the Program Office proposed additional changes to improve the missile's probability of success that were not acceptable to

AFOTEC and resulted in the test being redesignated a developmental test under the control of the Program Office. The changes that improved the missiles' probability of success are described below.

- AFOTEC proposed deleting a planned maneuver that would have increased the distance between the targets. The Program Office did not accept this proposal because the closer target spacing could have required performance capabilities beyond those of the interim design missile. The Program Office, in the revised test, increased the separation between the targets.
- The bandwidth of the self-screening jammer was increased, thus increasing the probability that the missile would guide to the target by increasing the amount of available guidance information. The Program Manager said the change made the jamming more representative of the threat.
- The jammer designed to disrupt the delivery aircraft radar was deleted. During the final test rehearsal, the jammer adversely affected the delivery aircraft's ability to provide the missiles with accurate target locations. The Program Manager stated that the jammer was not required by the act.

In addition, because of an aircraft radar malfunction, the pilot had to implement a training launch procedure that he would not use in combat. The Program Manager said that this was not a missile problem and that the Warner Robins Air Logistic Center is correcting the problem.

The revised second test was attempted on April 24, 1987, but was aborted. One of the missiles had a wiring defect and did not pass a ground test to ensure that it was ready for launch. This problem was corrected but another wiring problem caused a malfunction just before launch. Analysis revealed that a wire inside the missile was damaged when the missile's fins were installed.

The revised second test was accomplished on April 29, 1987. According to the Air Force, this test met the requirements of the act. One missile scored a direct hit on its target, and the other missile passed sufficiently close to its target to be considered a success by the Air Force. However, certain anomalies were identified that would be unacceptable for initial production missiles. Air Force test officials rated the missile fired at the target with the self-screening jammer as marginal in guidance and unacceptable in fuzing. (Fuzing detonates the warhead

when it passes within the optimum lethal distance of the target.) Air Force program officials pointed out that these problems did not prevent the missile from guiding to within the warhead's lethal radius. The Program Manager told us that the problems will be corrected before production starts and noted that corrective actions for the fuze problem are underway and that guidance problems are under investigation.

THE THIRD TEST

The third test, which was to be in June, before the July contract award, has been rescheduled for October 1987. The Air Force has concluded that since the second test was judged successful, the third test is not needed to satisfy the act's requirements.

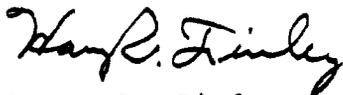
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We obtained information on these test results as part of a larger review of the AMRAAM program's status. In compiling the information, we reviewed AMRAAM test plans and reports and discussed the tests with officials of the AMRAAM Program Office, the Joint AMRAAM Test Force, and the Air Force Operational Test and Evaluation Center. We also witnessed the April 29, 1987, AMRAAM test firing.

This fact sheet was discussed with AMRAAM Program Office officials at Eglin Air Force Base, Florida, and changes were made to better reflect their views. As requested, we did not obtain official agency comments.

Unless you publicly announce its contents earlier, we plan no further distribution of this fact sheet until 5 days from its date. At that time we will send copies to the Chairmen, Senate and House Committees on Appropriations, on Armed Services, and on Budget; and the Secretaries of Defense and the Air Force. Copies will also be provided to interested parties and made available to others upon request.

Sincerely yours,



Harry R. Finley
Senior Associate Director

(392342)

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