



UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

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MISSION ANALYSIS AND
SYSTEMS ACQUISITION DIVISION

AUGUST 3, 1982

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The Honorable Melvin Price
Chairman, Committee on Armed Services
House of Representatives

The Honorable John G. Tower
Chairman, Committee on Armed Services
United States Senate

Subject: Procurement of the Army's AH-64 Helicopter
(GAO/MASAD-82-40)

We have just completed a review of the Army's AH-64 Apache helicopter and Hellfire missile programs on which we plan to report to the Congress later this year. On June 16, and 17, 1982, we met with members of your staffs who said it would be helpful if we provided the House and Senate Armed Services Committees our conclusions in view of the joint authorization conference planned for early August. This letter presents our general observations on the AH-64 which might be useful to the joint conference's deliberations on authorizing the procurement of the helicopter for fiscal year 1983 and beyond.

On December 1, 1981, we wrote to the Secretary of Defense noting a number of risks and uncertainties relative to the AH-64 that warranted delaying the production decision the Secretary was about to make until better information and more thorough analyses became available. Since then, key analyses and evaluations have been completed, the Secretary of Defense approved the helicopter's entering production, and a contract for the procurement of the first increment of 11 helicopters has been negotiated.

Some program risks remain and the Army faces a challenge in smoothly transitioning the AH-64 into production, a phase which has troubled other Army programs. We believe, however, that these risks have been adequately analyzed by Army officials who, together with the Office of the Secretary of Defense, appear to have a well-defined plan for addressing them. Therefore, at this time, we have no negative indications strong enough to warrant advocating a further production delay knowing the adverse effects that could result.

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Our objective was to assess the uncertainties in the AH-64 program as production begins and the extent to which they are being addressed by the Department of Defense. In making our review, we analyzed test results, independent evaluations, intelligence reports, baseline cost estimates, planning documents, and other Defense and contractor documents. We interviewed many individuals having responsibility for the AH-64 program, including representatives from the Office of the Secretary of Defense, Department of the Army, AH-64 Program Management Office, Army test and evaluation agencies, and Army Training and Doctrine Command. We also interviewed officials from Hughes Helicopter, Incorporated.

DEVELOPMENTS SINCE DECEMBER 1981

In our December 1981 letter, we cautioned the Secretary of Defense against making a production decision on the AH-64 because some important tests and evaluations had not been completed and sufficient information on which to base a production decision was lacking. We noted the undemonstrated effectiveness of configuration changes to be made in the target acquisition and designation sight (TADS) and in the helicopter engine; the apparent overstatement of the AH-64's reliability, availability, and maintainability; questions about the Army's ability to logistically support the helicopter; risks in the prime contractor's readiness for production; and shortcomings in the Hellfire missile's performance.

The production decision was delayed until March 26, 1982, at which time considerably more information about the AH-64's performance had become available. The Secretary's decision approving production detailed additional requirements in some of the areas of concern we reported in December. In the area of cost, the Secretary gave the Army 12 months to approve the contractor's cost measurement system and called for several Defense agencies to independently monitor contractor performance to provide early warning of production problems. The Secretary prescribed special TADS flight testing for August/September 1982 to validate technical fixes, particularly boresighting, and required the Army to independently evaluate the test. If TADS does poorly in the test, the Secretary of Defense will not release fiscal year 1983 production money for that subsystem. Finally, the Secretary of Defense directed the Army to collect reliability, availability, and maintainability data on all remaining developmental and production tests and to dedicate an early production aircraft for collecting additional data.

The AH-64 has experienced significant cost growth in the past year. Procurement costs for 536 aircraft as reported in the September 1981 Selected Acquisition Report were \$4.82 billion (\$9 million per unit), while the current procurement estimate is

\$6.15 billion for 446 aircraft (\$13.8 million per unit). Procurement costs would have been higher, but affordability concerns caused the Army to cut quantities by 90 aircraft and increase the production rate to a more economical 12 per month. The principal reason for the cost increase was a gross underestimate of the labor hours associated with aircraft wiring. Other increases occurred in the cost of automatic test equipment, warranty provisions, and spare parts. Although the prime contractor's initial proposal was unexpectedly high, the Army was able to lower the price during negotiations. The current cost estimate reflects those negotiations.

Production contracts for the first 11 AH-64s and associated logistic support and program services were awarded to Hughes Helicopter, Incorporated, on April 15, 1982. Contract negotiations were preceded by an intensive Army "should cost analysis," which along with concerns raised by earlier Army production readiness reviews resulted in the contractor's agreement to actively pursue improvements in several production, management, and cost-control areas.

Since December, the Army Operational Test and Evaluation Agency and the Army Materiel Systems Analysis Activity have completed their independent evaluations of the AH-64. In addition, a cost-effectiveness comparison with the Cobra helicopter has been completed and the Army Combat Developments Experimentation Command has completed its reports on AH-64 operational testing. The program manager has scheduled testing of TADS, the automatic test station, the fault detection and location system, as well as aircraft reliability and maintainability. Flight testing of the T-701 engine is ongoing and so far no major problems have been disclosed. In addition, the Army Materiel Systems Analysis Activity plans to independently evaluate and report on the outcome of all these tests.

In short, the Army has taken a number of initiatives which should alleviate some of the development and production risks associated with the program.

CURRENT CONCERNS

Successfully transitioning the AH-64 and Hellfire into production will require a considerable effort on the part of the Army. In these next few years, development and testing must be completed, fixes proven out, a production facility built, a labor force attracted, and production lines established.

A substantial amount of testing and evaluation is planned for the AH-64 before its fielding. Testing of the TADS bore-sighting fixes and microminiaturization, as well as a significant development effort on the automatic test station, is still to be completed. Testing of the AH-64 in temperature extremes

late last year revealed inadequate heating and cooling of the cockpit and avionics, and fixes have to be proven out. Although the program manager does not assign a high risk to these remaining efforts, getting each of the subsystems into their production configuration and ensuring they all work together as an integrated weapon system represent a considerable effort in preparation for production.

Perhaps more significant than these technical efforts are the preparations to be made for producing the AH-64. The basic concern stems from the fact that Hughes Helicopter, as final assembler, will have to integrate the sophisticated aircraft components produced by some 17 other contractors. Coordinating the production and delivery of all these components, as well as setting up a smooth final assembly, constitutes a complex management undertaking for Hughes' relatively new executive team. Building the new production facility in Mesa, Arizona, putting together a labor force, and getting both ready for production also pose hurdles. In addition, the Defense Contract Audit Agency has raised concerns about the contractor's financial capabilities.

The Army has recognized these production concerns and has taken steps to reduce them. In addition to closely monitoring the contractor's performance, the Army added \$528 million to the AH-64 procurement estimate to allow for cost growth associated with production risks. The Army has since suggested that this money is no longer needed for production risk, based on successful contract negotiations, and would like to use it to buy more helicopters. We believe that these funds should be retained for contingencies because the production concerns cited above have not been significantly eased.

Additional matters need to be brought to your attention regarding the decisions that must be made on the AH-64 Apache for fiscal year 1983 and in succeeding years. The Hellfire missile, because it is the helicopter's main armament, and the Army Helicopter Improvement Program, whose main justification is to provide a scout helicopter for the AH-64, are both directly related to the AH-64 program. Thus, while the merits of these two programs must be evaluated individually, funding decisions on the programs should be made in consideration of your decisions on the AH-64. In addition, the Army plans to request AH-64 procurement funds on the order of \$1.5 billion each year for fiscal years 1984 through 1986, reflecting the acceleration to a production rate of 12 per month. The affordability of such funding levels should be considered early so that the Army does not get into the position of building up a production capacity that would not be fully used because of funding constraints.

CONCLUSIONS

There are some remaining development, testing, and production readiness concerns which present a degree of production, cost, and schedule risk to the AH-64 program. Nevertheless, given that these potential problem areas are being addressed by the Department of Defense, they do not appear to pose an unacceptable risk at this time. While delaying production for 1 or 2 years would enable the Army to do more testing and might reduce developmental risks somewhat, it would not seem to appreciably reduce production related risks which are perhaps more significant. Moreover, a delay would create further cost increases and schedule slippages, bringing into question the Army's ability to obtain the weapon for which it professes an urgent need. To be sure, program costs are high. Whether they are too high to justify procurement or to be affordable is a subjective judgment the Congress and the Department of Defense will eventually have to make.

Although we did not submit a draft of this letter to the Department of Defense for comments, we have discussed our findings and obtained the views of officials in the Office of the Secretary of Defense and the Army who are associated with the AH-64 and Hellfire programs. Their views were considered in the preparation of this report.

We trust this information will be useful to the conferees, and if desired, we can provide additional information at your requests.



W. H. Sheley, Jr.
Director