

096300

3.15.21



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

73-1-1

PROCUREMENT AND SYSTEMS  
ACQUISITION DIVISION

SEP 14 1972

20  
36

B-169675



The Honorable  
The Secretary of Defense

Attention: Assistant Secretary of Defense  
(Comptroller)

Dear Mr. Secretary:

In a previous review of the Army Munitions Command's engineering development and product improvement projects, we reported a need for better management controls. In response to our draft report, the Assistant Secretary of the Army (Research and Development) advised that action had been taken to improve the management weaknesses noted. We notified your office that a follow-up review would be made.<sup>1</sup> This report is our assessment of the new management controls.

We evaluated the preparation, review, and approval of the fiscal year 1971, 1972, and 1973 product improvement proposals processed by the Army's Aviation Systems Command (AVSCOM), a major subordinate command of the Army Material Command (AMC). We also analyzed the review, approval and coordination procedures followed by AMC, the Combat Developments Command (CDC), the Deputy Chief of Staff for Logistics, and the Assistant Chief of Staff for Force Development.

Since the introduction of the present major aircraft into the Army system, AVSCOM has spent more than a half billion dollars to improve them. Since the implementation of the revised management controls in 1969, AVSCOM has spent an average of about \$57 million a year in aircraft improvements.

New Management Controls Have  
Not Resolved All The Problems

Although revised Army Regulation (AR) 700-35 has produced a formalized product improvement program with many more management

<sup>1</sup>B-169675, June 1, 1971.

~~701263~~ [096300]

B-169675

controls, difficulties with the program still exist. These difficulties appear to result from ineffective implementation of the revised regulations.

Data Requirements During  
Planning Phase

To assure an effective program, it is necessary to plan and control each product improvement from the time the need is recognized until the modification has been installed on the end-item. The plan must consider all phases of the program together and in logical sequence.

Because of the budget process, the planning phase of the program must be initiated at least 20-24 months before any specific work on the improvement begins. Army regulations direct that specific data with regard to cost analysis, cost effectiveness, and overall cost estimates be developed during this phase. This requires that cost data be developed before engineering effort has actually resolved the problem.

According to AVSCOM officials, it is difficult to develop reliable cost estimates and cost-effectiveness studies until after the product improvement task has been definitized and some preliminary engineering is completed. This may account, to a large extent, for the significant changes in estimated cost noted for selected product improvements we reviewed, and also explain why only 25 economic analyses studies were prepared to support the 1973 program when 82 were required. A comparison of selected cost estimates for product improvement proposals included in fiscal year 1972 and fiscal year 1973 programs showed changes ranging from a 248 percent increase to a 57 percent decrease.

Based on the results of our review, it appears that adequate cost estimates and economic analyses cannot be prepared until sufficient engineering effort has been completed to definitize the problem in terms of manpower and material requirements for engineering, testing, producing, and installing the modifications.

Therefore, we believe that product improvement proposals should not be submitted until after sufficient engineering work has been done to evaluate the problem and consider possible solutions. This could be accomplished by establishing a separate fund, based on historical cost data, which would be available to support preliminary engineering efforts prior to the preparation and submission of formal product improvement proposals.

B-169675

Need For Coordination

Revised AR 700-35 requires that proposed product improvements involving mission performance and mission availability characteristics be coordinated between AMC and CDC prior to submission to the Department of the Army (DA).

We found that many product improvements involving these characteristics were not coordinated with CDC as required. As a result, modifications may be approved which are not acceptable to the using commands. Our analysis of AVSCOM's 1973 program disclosed that 115 of its 179 improvements were justified on the basis of increased mission performance and availability; however, AMC submitted only 21 to CDC for review. Other AMC subordinate commands also stated that most of their product improvements pertained to mission availability, but of the 420 proposals AMC received for the 1973 program, only 173 were sent to CDC for coordination.

CDC officials informed us that they have no way of knowing whether they are receiving all the product improvement proposals they are required to review. In addition, for the 1973 program CDC was given only five working days for its review; however, CDC requested that at least 30 days be allowed in the future.

Although product improvement regulations do not contain any specific procedures governing coordination among AMC's major subordinate commands, it is our opinion that, for the proper interface of avionics and armaments with the various aircraft, close coordination is necessary between the commands involved. Our review of these coordination efforts for the 1971, 1972, and 1973 programs disclosed that some improvement has been made in this area. However, in a letter subsequent to the 1973 program preparation, AMC cites the late coordination between the Aviation, Electronics, and Weapons Commands as an area requiring further improvement.

Test Requirements

Not Shown

Our review of AVSCOM's product improvements for 1973 also disclosed that test requirements for each proposal were not always stated, as required. Based upon the Army's guidance, the scope and degree of testing should have been shown on 108 of AVSCOM's 170 product improvements. However, we found that it was covered on only 28 of these proposals.

In the past, the General Accounting Office and the Army Audit Agency have issued many reports citing instances where items have

B-169675

been released to the production phase before an adequate degree of testing had been accomplished.

Configuration Control Board  
Review Not Done

The regulation and supplementary AMC guidance establish procedures and controls to assure that product improvements are planned and reviewed. An important part of this process is the configuration control board review. At the major subcommand level, the review provides an opportunity for the command's various functional components to evaluate each proposal and assess the total impact of the proposed change. At the AMC level, its configuration control board is intended to assure that only essential improvements are forwarded for approval and funding.

We were informed that AVSCOM did not perform this review as directed because there was no time to convene the board. As a result, the workload of the reviewing groups at AMC was increased. We believe that had such a review been performed, better coordination between AVSCOM's functional areas would have resulted leading to better planning and reviewing. In the 1971 program, for example, 52 funded improvements were dropped from the program after they had been approved and funded. Had an in-depth configuration control board review been performed, many of these improvements might not have been submitted.

It is imperative that configuration control board reviews be conducted to ensure that proposed improvements are essential and fully justified. This is especially important in view of the existing AVSCOM modification work order installation backlog (1,000,000 man-hours), and the 2,000,000 man-hours to be added to the backlog by the 1973 program. In a prior report on AVSCOM's work order program (B-157373, January 14, 1970), we stated that control must be exercised to ensure that the directed workload does not exceed the capacity of any maintenance activity. The report showed that the volume of modification work orders had accumulated to workloads beyond the capacity of maintenance installation activities and, consequently, modifications were significantly delayed.

Corrective Action  
Taken Thus Far

After discussions with AVSCOM, AMC, and DA personnel, several changes were made to the product improvement program. For example,

B-169675

AVSCOM revised its interim configuration control board procedures to insure that the command's product improvement proposals are reviewed for compliance with the regulations and that the total impact of each proposed change is assessed. This change, in our opinion, should help assure that the new management controls contained in the revised Army regulations are implemented in regard to consideration of testing and coordination among major subcommands and with CDC, and it should also place more emphasis on the total program planning. In addition, the AMC guidance letter for the 1974 program allowed the major subcommands 50 percent more time to prepare, review, and coordinate their proposals. AMC also provided additional guidance and clarification of the regulations. These changes should alleviate some of the problems we noted during our review.

#### Conclusions and Recommendations

In addition to the recent changes made by AVSCOM and AMC, we recommend that the Army

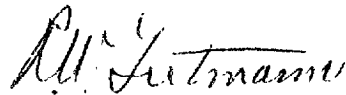
- Consider the feasibility of establishing a separate fund to support preliminary engineering efforts for product improvements to enable the sponsoring command to prepare more accurate and complete estimates before the proposal is submitted for approval.
- Ensure that all product improvement proposals involving mission performance and availability are coordinated between AMC and CDC before final approval, as required by regulations.
- Require that each AMC major subordinate command coordinate its proposals with its CDC liaison officer and appropriate CDC Agency as early in the program as possible to ensure that the proposed change is acceptable to the user before extensive effort is expended.
- Assure that the scope and degree of testing is shown on proposals as required and improvements are not released for production before testing is complete.

If you or your representatives wish to obtain further details concerning this matter, please contact Mr. Harold H. Rubin, Deputy Director (Technology Advancement), code 129, extension 4325.

B-169675

Copies of this report are being sent to the Appropriations, Government Operations, and Armed Services Committees of both Houses of the Congress and to the Secretary of the Army.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "A. J. Luttwak".

Director