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[Concurrent Development and Production of MK-12A Reentry Vehicle]. PSAD-79-2; B-163058. October 23, 1978. 3 pp.

Report to Harold Brown, Secretary, Department of Defense; by Jerome H. Stolarow, Director, Procurement and Systems Acquisition Div.

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Contact: Procurement and Systems Acquisition Div.

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A review of the development test and evaluation program for the MK-12A reentry vehicle system intended for deployment on Minuteman III missiles indicated that the MK-12A was not subjected to the Defense Systems Acquisition Council purview although significant design changes were required and estimated program costs were substantial. The decision to produce MK-12A systems for operational deployment was made in December 1976 before initiation of the deployment flight test program when only limited component and system testing had been completed. MK-12A subassemblies are now being fabricated for delivery in 1979 and for subsequent operational deployment even though important development tests will not be completed until late 1978 and early 1979. Air Force officials said that the program involved low technical risks and that concurrent development and production was justified because it allowed a less disruptive transition from development to production. Technical risks were significant at the time of the production decision, and further tests are needed to fully evaluate the risks. The technical risks arise from a combination of the new miniaturized arming and firing system, high-reliability requirements, and the extreme stress that a reentry vehicle is subjected to during its flight. The Secretary of Defense should reassess the actions taken to date before permitting the Air Force to award the follow-on production contract scheduled for December 1978. (RRS)



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

PROCUREMENT AND SYSTEMS
ACQUISITION DIVISION

B-163058

OCTOBER 23, 1978

The Honorable Harold Brown
The Secretary of Defense

Attention: Assistant for Audit Reports
Room 3A336
ASD (Comptroller)

Dear Mr. Secretary:

We reviewed the development test and evaluation program for the MK-12A reentry vehicle system intended for deployment on Minuteman III missiles. Estimated program costs through 1982 are \$150.9 million for development and \$357.8 million for production.

We found that the MK-12A was not subjected to the Defense Systems Acquisition Review Council purview although significant design changes to the MK-12 system were required and estimated program costs were substantial. Also, the decision to produce MK-12A systems for operational deployment was made in December 1976, before initiation of the developmental flight test program, when only limited component and system testing had been completed. Long leadtime funding was provided in mid-1977, and the initial production contract was awarded in March 1978 for \$45.3 million. MK-12A subassemblies are now being fabricated for delivery in 1979 and for subsequent operational deployment, although important development tests will not be completed until late 1978 and early 1979.

Air Force officials said the program involved low technical risks and that concurrent development and production was justified because it permitted a less disruptive transition from development to production. They added that test results, to date, fully justified concurrent development and production.

We disagree. We believe the technical risks were significant at the time of the production decision and that further tests are needed to fully evaluate the risks. The technical risks arise from a combination of the new miniaturized

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arming and fuzing system, high-reliability requirements, and the extreme stress that a ballistic reentry vehicle is subjected to during its flight. Engineering design problems have arisen, and, as with any complex development program, more can be expected as the development and evaluation process continues.

The program contracting officer justified using a cost-type contract for the award in March 1978 because the uncertainties in contract performance were so great that costs could not be estimated with enough confidence for fixed-price contracting. Further, he noted that (1) over 90 percent of MK-12A components were being redesigned from the MK-12 configuration to incorporate more advanced electronics and to reduce production costs and (2) the final production design was not anticipated for a considerable period after the award. In addition, program contracting officials were concerned that hardness and qualification tests scheduled in late 1978 could result in components having to be redesigned.

The follow-on production contract for MK-12A production units is expected to be awarded in December 1978, as a fixed-price contract.

Problems with the MK-12A have been identified as the result of tests conducted through May 1973 and, although solutions have been incorporated into the design and are being tested at the component level, system tests with these changes are still to be performed. Incorporating future design changes into the MK-12A units scheduled for initial deployment as a result of the tests recently performed and those yet to be performed, could require costly retrofit and modification programs which could also delay their deployment. Conversely, existing cost and schedule constraints may preclude further design changes that are desirable and that otherwise would have been made to avoid potential performance degradation.

In view of the above, we recommend that you reassess the actions taken to date before permitting the Air Force to award the follow-on production contract. It is of paramount importance that assurances are in hand to conclusively demonstrate that performance specifications and operational requirements are attainable before the system is produced and deployed.

Certain problems associated with the new arming and fuzing device on the MK-12A that we noted during the review have already been brought to the attention of senior Department of Defense officials and the Chairman of the Subcommittee on Research and Development, House Committee on Armed Services. In closed hearings before the Subcommittee on August 15, 1978, the Under Secretary of Defense for Research and Engineering stated that his office would study alternative solutions and submit to the Subcommittee a plan for implementing the alternative selected.

We are sending copies of this report to the Director, Office of Management and Budget; the Chairmen, Senate and House Committees on Appropriations and Armed Services; the Chairman, House Committee on Government Operations; the Chairman, Senate Committee on Governmental Affairs; and the Secretary of the Air Force.

Section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We would appreciate receiving your comments on these matters when they are submitted to the congressional committees.

Sincerely yours,



J. H. Stolarow
Director