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

PROCUREMENT AND SYSTEMS
ACQUISITION DIVISION

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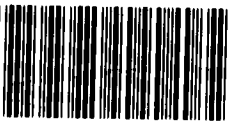

The Honorable Harold Brown
The Secretary of Defense

Attention: Assistant for Audit Reports

Dear Mr. Secretary:

Subject: The ~~Department of Defense~~ [DOD] Should Resolve Certain Issues Concerning the C-X Aircraft Before Requesting Proposals From Industry for Its Full-Scale Engineering Development (PSAD-81-8)

Our review of the C-X aircraft program addressed major issues concerning the aircraft's range and its load carrying capability. In addition, Defense has not yet completed its strategic mobility requirements study as directed by the House and Senate Authorization Act for fiscal year 1981 nor has a Mission Element Need Statement (MENS) been approved. Nevertheless, the Air Force plans to solicit formal design and cost proposals from potential contractors in the immediate future for the full-scale engineering development of the C-X aircraft. We believe such action before these matters are resolved is both premature and contrary to the sound acquisition management principles of Office of Management and Budget Circular A-109.

BACKGROUND

In November 1979 the Air Force formed a task force with Army and Marine Corps participation to define future airlift requirements for the worldwide deployment of U.S. forces. The task force analysis revealed significant shortfalls in the capability of the United States to provide long-range intertheater airlift to meet worldwide rapid mobility requirements. In addition, the task force recognized that the United States does not currently have the capability to airlift large outsize cargo, such as the Army's XM-1 main battle tank and infantry fighting vehicles, within a theater (intratheater).

The task force recommended the acquisition of an airlift aircraft with adequate size and range to carry outsize cargo intertheater and also with the capability to land at small austere airfields. The small austere airfield landing capability would reduce potential aircraft saturation at larger airfields and would allow the aircraft to be used in an intratheater role.

To meet these requirements the Air Force has proposed the C-X, an aircraft which can carry larger loads than the C-141 but about half as much as the C-5. Full-scale production of the C-X could begin about October 1986 with an initial operational capability in September 1987. The Air Force estimates that a procurement of 200 C-X aircraft could cost about $10 billion to $11 billion (fiscal year 1980 dollars) for development and production.

The Air Force is planning to issue requests for proposals (RFPs) to potential contractors for the full-scale engineering development of the C-X aircraft. If the RFPs are issued in October 1980 as planned, source selection could begin in January 1981.

C-X RANGE AND LOAD CAPACITY MAY BE INADEQUATE

The current design range of the C-X may be inadequate unless substantial refueling is provided at intermediate land bases or by aerial refueling. In addition, proposed modifications to the Army's XM-1 main battle tank could increase its total combat weight to over 130,000 pounds, the C-X's maximum load capacity.

Current C-X design range may be inadequate

In certain contingencies, the range of the C-X may not be adequate to reach its destination without refueling. There is some question, however, as to whether sufficient aerial or land-based refueling will be available to meet C-X requirements. In a Persian Gulf conflict, for example, the most likely route for the C-X would be from the Eastern United States to Lajes Air Base in the Azores; then to Cairo, Egypt; and then to Dhahran, Saudi Arabia. The distances involved are 2,295, 3,155, and 1,170 nautical miles, respectively. With a design range of 2,400 nautical miles while carrying a maximum load, the C-X could not travel from Lajes to Cairo without refueling. If the C-X carried only 75 percent of its maximum load (97,500 pounds), its

range would be increased to 3,200 miles and refueling may not be necessary. However, both the XM-1 and the M-60 main battle tanks exceed 75 percent of the C-X's maximum load. Therefore, the C-X could not carry these tanks that distance without refueling.

Although the Air Force plans to equip the C-X for aerial refueling, Air Force studies indicate the tanker capability of the United States may already be inadequate for some contingencies involving both strategic and tactical forces. With the addition of the C-X to the airlift force, there will be an even greater demand on limited tanker resources. Therefore, adequate aerial refueling may not always be available to the extent required by the C-X.

The C-X could rely on alternate land-based refueling stops in Europe or the Mediterranean to carry its maximum load to the Persian Gulf area. In the 1973 Middle East war, however, the United States could not obtain diplomatic clearance to use bases which the United States normally used in the United Kingdom, Spain, Italy, Greece, and Turkey. Also in 1973, the aircraft had to avoid flying over land masses and stay out of airspace controlled by Arab countries. With the growing political and economic influence of third world countries, the availability of en route refueling locations in the future may be denied, as was the case during recent attempts by the United States to deploy fighters to Egypt and to deliver F-16s to Israel.

In contingencies other than the Persian Gulf, the C-X would also require refueling. For example, in a European conflict the C-X could not travel from the Eastern United States to central Germany without either aerial refueling or one land-based refueling stop. In a Korean conflict, the C-X with maximum load would require three land-based refueling stops, or a combination of aerial refueling and land-based stops.

An alternate airlift plan could employ the C-5 to carry XM-1 and M-60 tanks while the C-X carried lighter cargo to extend its range. Although this would be possible, it might also create additional intratheater airlift requirements because the C-5 cannot land at the small austere airfields that are planned for C-X operations. Therefore, the tanks would have to be moved intratheater with the C-X from the large C-5 airfields to the battle area. C-X aircraft tasked for this purpose would then be unavailable for intertheater airlift purposes. Also, this tactic would increase aircraft

traffic at the large airfields and contribute to airfield saturation.

C-X maximum load capacity may be inadequate to carry the XM-1 tank

The potential future weight growth of the Army's XM-1 main battle tank may make it too heavy to be carried on the C-X. The XM-1 currently weighs about 120,000 pounds, including fuel and ammunition. The Army has approved modifications to the tank, including the addition of the 120-mm. gun which will increase its combat weight to about 123,000 pounds and has proposed other modifications which could increase the tank's weight to a maximum of 134,200 pounds. This weight would exceed the maximum load capacity of the C-X by 4,200 pounds.

The XM-1's weight could be reduced about 7,000 pounds by unloading its fuel, ammunition, and machine guns. Although this would reduce the tank's weight below 130,000 pounds, we were told that the Army prefers the tanks to be combat ready when delivered to small austere airfield locations. We were also told that future modifications may become necessary to meet changing threats or to correct deficiencies and that these modifications could increase the tank's weight to over 130,000 pounds even without fuel and ammunition.

DEFENSE MOBILITY STUDY MAY AFFECT C-X DESIGN

Although Defense has not yet completed a study of the mobility requirements which could affect the design of the C-X aircraft, the Air Force is continuing with its plans to issue RFPs to potential contractors for its full-scale engineering development. As you know, the House and Senate Committees' Authorization Act for fiscal year 1981 has directed Defense to conduct a comprehensive study of the mobility requirements for United States military forces. Although the committees believe there is a need for additional strategic airlift capability, it is uncertain as to whether the C-X concept proposed by the Air Force is the best way to provide this added capability.

Defense's mobility study is intended not only to determine total airlift requirements, but also to form the basis for the design of suitable new aircraft or derivatives of existing aircraft, to meet the requirement. Although the results of this study will not be reported to the committees

until February 1981, the Air Force plans to issue RFPs about October 15, 1980.

By issuing RFPs several months before the mobility study is completed, the Air Force may be requesting an aircraft design that is not fully compatible with the needs indicated by the study results. This would require the Air Force to revise and reissue RFPs and solicit new proposals from the contractors. This effort could cost the contractors several million dollars which would be shared in part by the U.S. Government through the allocation of overhead to Government contracts.

A C-X MENS SHOULD BE APPROVED

We are also concerned that the Air Force apparently plans to release C-X RFPs prior to the Secretary of Defense's approving a MENS. Although we were unable to obtain the Office of the Secretary of Defense's informal comments on the draft MENS, we understand some controversy exists within Defense over the cost effectiveness of procuring a C-X with both intertheater and intratheater capabilities. Because this issue could have a significant impact on the design and cost of the aircraft, we believe that the Air Force should not issue RFPs until a C-X concept has been agreed upon and a MENS is approved.

CONCLUSIONS AND RECOMMENDATIONS

The Air Force is planning to request cost and design proposals from potential contractors for the full-scale engineering development of an aircraft which may not have the range or load carrying capacity to meet mission requirements. In addition, because Defense has not completed its mobility requirements study and the C-X MENS has not been approved, the Air Force may be requesting an aircraft design that is not compatible with the mobility study results or the concept as agreed upon by the Office of the Secretary of Defense and stated in the MENS.

We recommend that you direct the Secretary of the Air Force to delay issuing C-X RFPs or proceeding further with the C-X program until the Air Force resolves the aircraft's range and load limitations and until the mobility requirements study is completed and a MENS is approved. We believe these actions would provide sound management to an acquisition program that currently contains uncertainties and

could undergo substantial changes when these uncertainties are resolved.

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We are sending copies of this letter to the Director, Office of Management and Budget, and the Secretaries of the Army, Air Force, and Navy. We are also sending copies to the chairmen of the Senate and House Committees on Armed Services and Appropriations, the House Committee on Government Operations, and the Senate Committee on Governmental Affairs.

This report contains recommendations to you on page 5. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement of actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agencies first request for appropriations made more than 60 days after the date of the report. We would appreciate receiving a copy of your statement when it is provided to the congressional committees.

Sincerely yours,

W. H. Sheley, Jr.
Acting Director