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COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

CRITICAL CONSIDERATIONS
IN THE ACQUISITION OF
A NEW MAIN BATTLE TANK
Department of Defense

D I G E S T

The Army is in the midst of its third attempt in the last decade to develop a successor to its current main battle tank--the M60A1. Earlier efforts were aborted mainly for reasons of cost. (See pp. 2 and 39.)

Improvements in anti-tank weapons have made tanks more vulnerable than in the past. Even so, most military strategists maintain that the tank is still an effective assault weapon, the best anti-tank weapon, and a critical instrument in conventional land warfare (See ch. 1.)

More pertinent considerations are the numbers, operational capabilities, and costs of tanks to be procured; their effective mix with other weapons; and the need for standardization of weapons systems among North Atlantic Treaty Organization members.

In July 1976 the Secretary of Defense is scheduled to decide whether the new tank, the XM-1, should advance into the next phase of development. (See ch. 5.)

GAO recognizes the desirability of maintaining a development program at a reasonable rate of progress. Although the performance of the XM-1 against the stated requirements is known from recent prototype testing, GAO believes the Army is permitting the XM-1 program to proceed on the basis of incomplete and inconclusive information concerning broader issues.

RELEASED

For example:

--Army cost-effectiveness studies have not considered whether a qualitative improvement in the main battle tank, or the

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fielding of less costly weapons in greater numbers, is a better solution to overcoming the Warsaw Pact's heavy numerical superiority in tanks. (See pp. 21 to 26.)

--There are questions regarding the choice of the main armament for the XM-1. Recent tripartite tests in which the U.S., Great Britain, and West Germany jointly participated showed that a German 120mm gun provided the best basis for development as an effective tank gun of the future. The Army now plans to equip the XM-1 with its 105mm gun and rely on improved ammunition to increase its lethality. This decision was made, in part, to avoid increases in weight and cost. The Soviets, employing a larger gun with a longer range on their tanks, may have an advantage in firepower over the XM-1. (See pp. 27 to 30.)

--A competitive tank developed in West Germany, the Leopard 2AV, has been modified to conform to the Army's XM-1 performance requirements. The Leopard, however, will not be ready for testing by the Army until some months after the decision on full-scale development of the XM-1 is due. This raises a question of whether the Department of Defense intends to seriously consider the Leopard as an alternative. (See ch. 5.)

Two factors determine the effectiveness of a tank--firepower and survivability.

Firepower is the ability to destroy enemy targets. It is influenced by the tank gun's range and accuracy and by the accuracy and lethality of the ammunition it fires. (See pp. 27 to 31.)

Survivability depends greatly on silhouette, mobility, and an ability to withstand enemy firepower. In any new tank development, trade-offs must be made between these and other factors. For example, a tank that provides substantial protection against enemy fire will generally be larger, heavier, and slower than a less well-protected

tank and will be easier for the enemy to see and hit. (See pp. 31 to 33.)

There are no clear-cut measures that define which of these features are most critical to the survivability of a tank in all situations--only varying judgments among military experts. The Army, in designing the XM-1, is mainly banking on better armor protection to enhance its survivability. (See pp. 33 to 37.)

Also bearing on the tank's survivability will be the Army's success in developing the Mechanized Infantry Combat Vehicle and its mounted BUSHMASTER gun, which are counted on to support the XM-1 in combat. (See pp. 30 and 31.)

The Secretary of Defense should

- accelerate ongoing studies which would consider the cost-effectiveness of an alternative armored force not wholly dependent on the use of costly heavy tanks and

- inform the Congress of the results of these comparisons and analyses at the next budget hearings.

The Department of Defense, disagreeing with GAO, maintains that it will have all the information necessary to properly decide whether to continue developing the XM-1. The Department regards the issues raised by GAO as ones which either cannot be resolved before the XM-1 will be needed or should be studied apart from the XM-1's acquisition.

The Department maintains that its July decision will be based on a thorough review of the prototype test results and a cost-effectiveness analysis of the tank. The Department does not believe it appropriate to include in this analysis the potential of possibly less costly force mixes as alternatives to a heavy tank force. It sees this as a question of planning the force structure not related to the decision at hand. It will continue to study the feasibility of a highly mobile, light tank

concept for possible adaptation after the XM-1's development. (See pp. 25, 26, and 54.)

The Department also maintains that the 105mm gun is the only logical choice for a main gun based on considerations of cost-effectiveness, North Atlantic Treaty Organization standardization, logistic economics, low risk, and adequacy of meeting the threat. The Department sees the tripartite tests and its own testing as having demonstrated that new 105mm ammunition will be more than adequate to meet the future threat as currently forecast. It will consider the 120mm gun if its assessment of the threat should change. (See pp. 30, 55, and 58.)

Department of Defense officials reaffirmed to GAO that the Secretary of the Army and the Secretary of Defense will consider the Leopard 2AV if it proves to be clearly superior and of comparable cost, all factors considered. On the other hand, the Department believes that the principal benefits to be gained from evaluating the Leopard are opportunities for technological transfusions and greater standardization of components. The Department is therefore continuing to develop the XM-1 rather than delaying the program until all Leopard 2 tests are completed, as some have suggested. (See pp. 48, 49, 55, and 57.)

GAO believes that the information on alternative force mixes evolving from the studies it has advocated is vital for the Congress to properly consider the XM-1's future. Additional issues which should be examined are:

- Whether the Department of Defense should be encouraged to develop cheaper tanks which, fielded in greater numbers, might better offset the Warsaw Pact's numerical tank advantage than large numbers of heavy tanks.
- Whether test results show that the 105mm gun's ammunition can be improved sufficiently to make it a worthier candidate than the 120mm gun, which has proven superior in armor-piercing capability.

--How the XM-1's cost, weight, and agility would be affected if the 120mm had to be adopted as the main gun.

--whether the Mechanized Infantry Combat Vehicle and BUSHMASTER can be produced at an acceptable cost, and with the performance capability necessary to provide the support critical to the XM-1's survivability.

--whether information is available on the Leopard's cost and performance to indicate that it should be seriously considered as an alternative to the XM-1.