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Report to the Chairman, Subcommittee on Defense, Committee on Appropriations, House of Representatives

December 2000

DEFENSE ACQUISITIONS

Need to Confirm Requirements for $4.1 Billion Antiarmor Missile System

GAO-01-74

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United States General Accounting Office
Washington, D.C. 20548

December 5, 2000

The Honorable Jerry Lewis
Chairman, Subcommittee on Defense
Committee on Appropriations
House of Representatives

Dear Mr. Chairman:

In response to congressional concerns about the increasing number of tank-killing weapons at a time when potential adversaries have smaller armored forces, you asked us to review and report on the Department of Defense's (DOD) Antiarmor Munitions Master Plan and selected antitank programs currently being developed or produced. We have issued two reports on antiarmor issues: one stated that the armored threat has declined significantly since the end of the Cold War while inventories of antiarmor weapons have not reflected the change[1] and the other report stated that the master plan did not identify potential excesses or adequately support planned procurements of antiarmor weapons.[2]

In our work leading up to these reports, we found that the Brilliant Antiarmor Submunition and Army Tactical Missile System program—hereafter called the submunition and missile system—has had significant cost increases and schedule delays and that it is scheduled for a May 2001 full-rate production decision. The program is developing and acquiring an antitank weapon system that consists of a tactical missile loaded with 13 submunitions. DOD's December 1999 Selected Acquisition Report shows the Army is planning to spend $3.1 billion, in 1991 base-year dollars, to buy 1,206 missiles and 15,707 submunitions. The spending estimate when converted to then-year dollars totals $4.1 billion.[3]

As agreed with your office, this report discusses the submunition and missile cost increases and DOD-wide antiarmor requirements as the

[1] *Defense Acquisitions: Reduced Threat Not Reflected in Antiarmor Weapon Acquisitions* (GAO/NSIAD-99-105, July 22, 1999).

[2] *Defense Acquisitions: Antiarmor Munitions Master Plan Does Not Identify Potential Excesses or Support Planned Procurements* (GAO/NSIAD-00-67, May 5, 2000).

[3] All the submunition and missile system procurement cost estimates are reported in base-year 1991 dollars. Then-year dollars reflect the cost at the time of procurement.

program approaches its full-rate production decision point. At the full-rate production decision point, DOD officials are expected to confirm the affordability of the program and establish a realistic acquisition program baseline.

Results in Brief

From 1995 through 1999, the program's production schedule was increased from 9 to 14 years and quantities were reduced from 19,902 to 15,707 submunitions and 1,806 to 1,206 missiles. During this period, total program costs increased from $2.1 billion to $3.1 billion—a 48-percent increase—due to the schedule increases and quantity reductions as well as poor estimates and technical difficulties, according to program officials. Reductions in submunition and missile procurement quantities combined with increased total program cost resulted in unit procurement cost increases of 80 percent for the submunition and 72 percent for the missile. Further, DOD's 1999 estimates show that it will now cost almost $2.6 million to procure one missile loaded with 13 submunitions—$1.1 million more than the 1995 estimate of $1.5 million.

Previously, we reported that (1) DOD has considerable quantities of very capable antiarmor weapons; (2) the armor threat is less than 20 percent of Cold War levels; and (3) the 1999 antiarmor master plan did not adequately support DOD's current antiarmor weapons acquisition plans, including the submunition and missile system. Since the submission of the plan, the Army has announced plans to transition to a lighter, more mobile force. The submunition and missile system is a weapon considered to be part of the traditional heavy armored force. Although it is expected to be deployed on a lighter, more mobile launching vehicle, the extent of its role in the Army's new warfighting strategies is not yet clear.

In July 2000, we provided a draft of this report to DOD for comment. In the report, we recommended that the Secretary of the Army not approve full-rate production of the submunition and missile system until its requirements and affordability have been clearly confirmed. DOD generally concurred with our recommendation and stated that the submunition and missile system requirements and affordability were confirmed in a revised antiarmor master plan delivered to Congress on July 31, 2000. DOD noted that requirements and affordability will be confirmed again prior to the full-rate production decision scheduled in May 2001. We reviewed the antiarmor master plan and found that it does not (1) provide the data and analysis needed to confirm the requirements and affordability of the submunition and missile system; (2) quantify the warfighting impacts of

adding the submunition and missile system to the planned inventory of joint service antiarmor weapons in 2007; or (3) provide any quantified measures of effectiveness needed to assess, compare, and prioritize antiarmor weapons requirements.

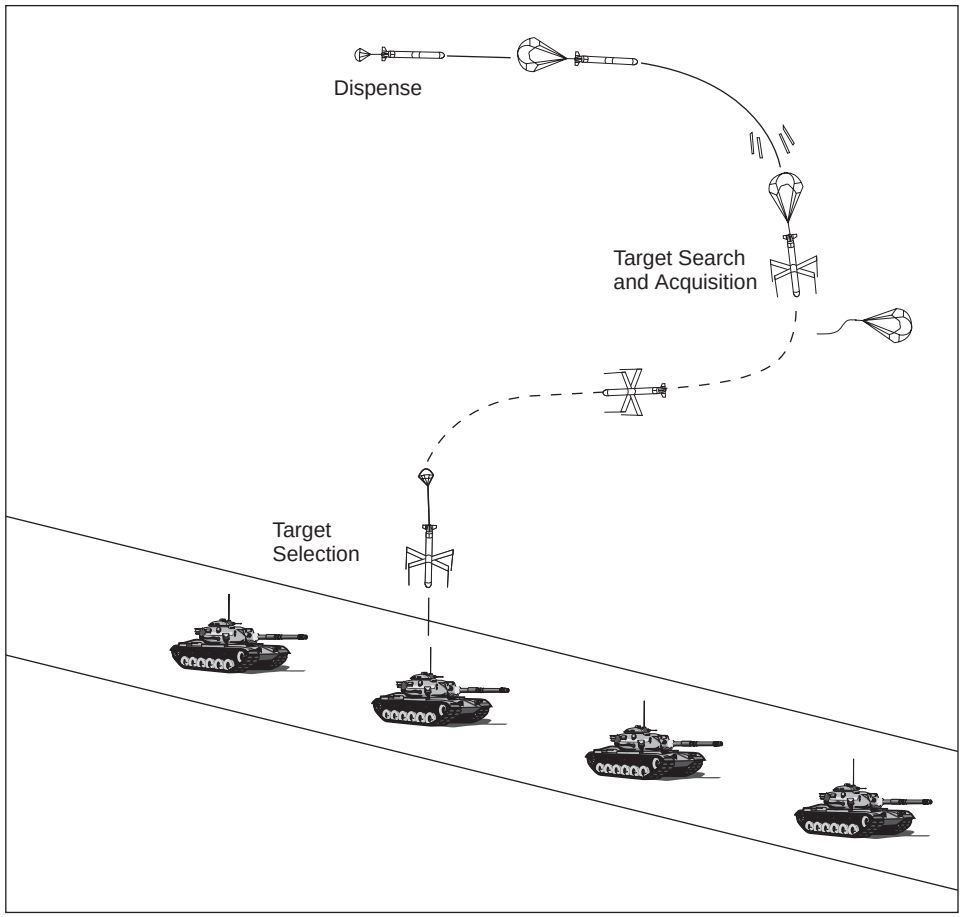
We believe that DOD's review of the submunition and missile system, prior to the full-rate production decision, needs to more clearly confirm its requirements and affordability. Accordingly, we recommend that the review (1) quantify and assess the warfighting impact of adding the system, at current planned quantities, to the combined services antiarmor weapons inventory in 2007; (2) assess the cost and warfighting impacts of alternative quantity levels; (3) compare the system's cost effectiveness to joint service alternatives; (4) identify and assess the extent the system reduces or otherwise impacts other antiarmor weapons requirements; and (5) identify and assess the impacts of the Army's transformation plans on the system's quantity requirements.

Background

The submunition development program began in 1984 and progressed to the engineering and manufacturing development phase in May 1991. The Army restructured the program in 1993 because the original carrier of the submunition—the Tri-Service Standoff Attack Missile—had been terminated. The Army designated the Army Tactical Missile System as the new carrier and established the submunition and missile weapon system. The new program called for the procurement of 1,806 missiles and about 19,900 submunitions.

The missile is a ground-launched, solid propellant, inertially guided missile system with 13 submunitions as its payload that is launched from the Multiple Launch Rocket System. The primary mission of the submunition and missile system is to delay, disrupt, neutralize, or destroy armored combat vehicles. The missile carries the submunitions deep into enemy territory where, as shown in figure 1, the submunitions—using acoustic and infrared sensors—detect, acquire, and engage moving armored vehicles.

Figure 1: The Submunition Acquiring a Moving Target



Source: Department of the Army

The submunition and missile program has been in low-rate production since 1999, and it is scheduled to have a full-rate production decision in May 2001. The Army plans to upgrade the submunition with a new radar and enhanced infrared sensors to increase system capabilities and expand its target base to include stationary armored vehicles.[4] The Army estimates the upgraded submunition will enter production in fiscal year 2003.

[4] The cost to procure the upgraded submunition is included in the program cost estimates.

Significant Cost Growth and Program Delays

Each year, from 1995 through 1998, the total estimated procurement cost of the submunition and missile program increased. The total cost stabilized in 1999, but only because the procurement quantities were decreased significantly. The cost of the procurement program, as reported in DOD's June 1995 Selected Acquisition Report, was estimated to be $2.2 billion. This estimate was based on a total of 19,902 submunitions and 1,806 missiles over a 9-year production effort. However, according to the latest available report (December 1999), estimated program costs have risen to $3.1 billion for a 14-year production effort. Through December 1998, quantities remained relatively constant for both the submunition and the missile. According to program officials, the cost increases were due primarily to poor initial estimates, the extended schedule, and technical problems. Even though the Army had reduced quantities to 15,707 submunitions and 1,206 missiles in 1999, the total estimated procurement cost remained at about $3.1 billion. Production cost increases negated the potential savings from the quantity reductions. Table 1 shows the approved program baseline cost for the systems in June 1995 and the program cost estimates, by year, from December 1996 through December 1999 (in base-year 1991 dollars).

Table 1: Submunition and Missile System Procurement Cost History (1991 base-year dollars in billions)

Weapon system	Baseline cost estimate (June 1995)	Program estimate (Dec. 1996)	Program estimate (Dec. 1997)	Program estimate (Dec. 1998)	Program estimate (Dec. 1999)[a]
Submunition	$1.134	$1.309	$1.416	$1.694	$1.874
Missile	1.082	1.088	1.139	1.497	1.244
Total system	**$2.216**	**$2.397**	**$2.555**	**$3.191**	**$3.118**

[a]Estimate reflects significant quantity reductions.

Source: Army Selected Acquisition Reports.

Unit procurement costs increased significantly over the last 5 years. In June 1995, the base-year 1991 unit costs were $66,000 for each submunition and $599,000 for the missile. Using the latest data, the new base-year 1991 unit cost figures are $119,000 for each submunition and $1,032,000 for each missile, or a unit cost increase of 80 and 72 percent, respectively. It now costs almost $2.6 million to procure one missile loaded with 13 submunitions compared with the 1995 estimate of $1.5 million. Table 2 is a comparison of unit costs from 1995 through 1999.

Table 2: Comparison of Submunition and Missile System Unit Cost—1995 to 1999 (1991 base-year dollars in thousands)

	Fiscal year 1995	Fiscal year 1999	Change in unit cost (1995-99)	Percent change (1995-99)
Missile unit cost	$599	$1,032	$433	72
Submunition unit cost	$66	$119	$53	80
Cost of 13 submunitions	$858	$1,547	$689	80
Total unit cost of one weapon system	**$1,457**	**$2,579**	**$1,122**	**77**

Source: Our analysis of Army Selected Acquisition Reports.

There is no certainty that the program will not encounter additional technical problems and cost increases because the development portion is still not complete. For example, operational testing of the basic submunition will not be complete until early 2001. Also, an improved submunition is being developed and it will be introduced into the production program as soon as it is available. Efforts are underway to address the currently identified technical and production problems with the submunition and missile system.

Questionable DOD-Wide Requirements for Antiarmor Weapons

The House Committee on Appropriations, in its report on the Fiscal Year 1999 Defense Appropriations Bill, expressed concern that the military services were continuing to develop and procure an increasing number of tank-killing weapons at a time when adversaries have smaller forces. The report also questioned whether current antiarmor acquisition plans were appropriate and directed the Secretary of Defense to develop an antiarmor master plan. The plan was submitted to Congress in late August 1999.

In July 1999, we reported that the number of armored targets under current planning scenarios had dropped to less than 20 percent of the number considered in Cold War scenarios. We also reported in July 1999 and May 2000 that (1) since the end of the Cold War, DOD had invested billions of dollars to further increase its antiarmor capabilities; (2) the military services had large inventories of 35 different types of antiarmor weapons; and (3) the services were planning to spend an additional $17.9 billion

(then-year dollars) on 15 new antiarmor weapon acquisition programs,[5] including the submunition and missile system.

In May 2000, we reported that, even though the existing antiarmor weapon inventory is more than adequate to defeat the threat as defined in the Secretary of Defense's planning guidance, DOD's antiarmor master plan did not identify any excess antiarmor weapons or provide the data and analyses needed to identify such excesses. We also reported that the plan provided little data and analyses to support the services' antiarmor weapon acquisition plans. We noted that an assessment of the services' joint antiarmor capabilities and changes in warfighting requirements could identify opportunities to significantly reduce requirements for certain antiarmor weapons currently being acquired.

We also pointed out in our May 2000 report that the Air Force had replaced the Army as the predominant service for attacking armored targets. In the 1998 warfighting planning target allocation, the Air Force's share increased from 20 percent of the allocated armored targets to 29 percent, while the Army's remained constant at 21 percent.[6] Nevertheless, the Army's planned procurement costs for antiarmor weapons from fiscal year 2000 to completion were about 80 percent ($14 billion) of DOD's total procurement budget for antiarmor weapons. Among the weapon systems that the Army plans to acquire is the submunition and missile system at a cost to completion of $4.1 billion (then-year dollars).[7]

Further, the Army is in the process of revising its warfighting strategy. In October 1999, the Army Chief of Staff announced plans to develop a lighter, more mobile force in response to concerns about the difficulties and limitations of transporting and supporting the large and heavy M1A1 tank and other heavily armored systems. The Army's plan is to transition to a lighter, smaller, more fuel-efficient force that can respond more quickly to contingencies. As part of this effort, the Army expects to (1) acquire new, lighter, and more mobile interim combat vehicles within the next 10 years

[5] Due to program changes since the issuance of our July 1999 report, DOD now plans to spend about $15.8 billion on these 15 antiarmor weapon programs.

[6] The 1998 warfighting target allocation increased the Air Force's share and decreased targets allocated to allied forces.

[7] As discussed earlier, the total procurement cost for the submunition and missile system is estimated at $3.1 billion in base-year 1991 dollars.

and (2) recapitalize some of its legacy systems, such as the Abrams tank and Apache helicopter, to maintain the current capability of its mechanized, or heavy, force. At the same time, the Army intends to develop and acquire Future Combat Systems, which are planned to begin entering the force in 2012. The House Appropriations Committee estimates the Army's transformation plans could cost at least $70 billion over the next 12 to 15 years. Obtaining additional funding for the transformation will be a challenge given that DOD's procurement spending is already projected to be considerably less than estimated requirements.

The submunition and missile system is launched from the Multiple Launch Rocket System that has traditionally been a part of a heavy armored division. In the future, the missile will also be launched from the High Mobility Artillery Rocket System. However, the extent of the role of the rocket system and the submunition and missile system in the Army's emerging warfighting strategy is not yet clear.

Revised Master Plan Does Not Confirm the Submunition and Missile System's Requirements and Affordability

The House Appropriations Committee, in its fiscal year 2000 report, noted the inadequacy of DOD's August 1999 antiarmor master plan and again directed DOD to submit a revised plan with its fiscal year 2001 budget request. The Committee expected the Secretary of Defense to prioritize DOD's antiarmor acquisitions, including the submunition and missile system.

In July 2000 we provided a draft of this report to DOD for comment. The report included a recommendation that the Secretary of the Army not approve full-rate production of the submunition and missile system until its requirements and affordability have been clearly confirmed. DOD generally agreed with our recommendation and stated that the submunition and missile system requirements and affordability are confirmed in the revised antiarmor master plan delivered to Congress on July 31, 2000. DOD's comments also stated that (1) it will confirm the system's requirements and affordability again at the full-rate production decision point in 2001; (2) the system is expected to be a key part of its plans to transform to a lighter and more lethal force; (3) the system's procurement cost increases are, in part, the result of budget reductions; (4) it believes the system is affordable given current funding profiles; and (5) it does not prioritize its antiarmor

programs in a top-to-bottom fashion.[8]

We reviewed the July 31, 2000, antiarmor master plan and found that it does not (1) provide the data and analysis needed to confirm the requirements and affordability of the submunition and missile system; (2) quantify the warfighting impacts of adding the submunition and missile system to the planned inventory of antiarmor weapons in 2007; or (3) provide any quantified measures of effectiveness needed to assess, compare, and prioritize antiarmor weapons requirements.

The master plan compared the effectiveness of the Army's antiarmor forces in two scenarios. In the first scenario, these forces face the armor threat expected in 2007, but with the current inventory of antiarmor weapons. In the second scenario, the Army's forces face the 2007 armor threat, but they are equipped with the weapons planned to be acquired by 2007, including a large increase in the submunition and missile system quantity. This assessment cites an increased effectiveness of the Army's antiarmor forces from the first to the second scenario and states that the submunition and missile system contributed to the increased effectiveness. In both scenarios, the Army's forces meet their warfighting objectives but, in the second scenario, the plan states that the objectives are met with fewer combat casualties and in less time. The master plan does not quantify the warfighting impacts of adding the submunition and missile system to the planned combined services inventory of all antiarmor weapons in 2007. The plan also does not identify any of the 35 different types of antiarmor weapons in the existing inventory that the submunition and missile system could replace.

Conclusions

A number of factors raise questions regarding the continued cost effectiveness of the Army's plan to invest $4.1 billion acquiring large quantities of the submunition and missile systems. These factors include (1) major reductions and changes in the armor threat, (2) a substantial overmatch in existing and planned antiarmor capabilities, (3) the system's high cost, (4) the Army's plans for a major transformation of its forces and the way it fights, and (5) current and projected Army funding shortfalls and high priority unfunded requirements. The Army's July 2000 Antiarmor

[8] Appendix I contains the full text of DOD's comments.

Master Plan does not clearly confirm the cost effectiveness of the Army's plan to invest $4.1 billion acquiring the submunition and missile system.

Recommendation for Executive Action

In commenting on a draft of this report, DOD stated that the submunition and missile system requirements and affordability will be reviewed again at the full-rate production decision point in 2001. We believe that DOD's review of the submunition and missile system, prior to the May 2001 full-rate production decision, needs to more clearly confirm its requirements and affordability. Accordingly, we recommend that the Secretary of Defense specify that this review (1) quantify and assess the warfighting impact of adding the system, at current planned quantities, to the combined services antiarmor weapons inventory in 2007; (2) assess the cost and warfighting impacts of alternative quantity levels; (3) compare the system's cost effectiveness to joint service alternatives; (4) identify and assess the extent the system reduces or otherwise impacts other antiarmor weapons requirements; and (5) identify and assess the impacts of the Army's transformation plans on the system's quantity requirements. Further, we recommend that the Secretary provide the results of this review in its fiscal year 2002 budget justification documentation for the submunition and missile system.

Agency Comments and Our Evaluation

We informed the official from the Office of the Under Secretary of Defense for Acquisition and Technology (Strategic and Tactical Systems) who was responsible for preparing and coordinating DOD's comments on the draft of this report that we revised the report to respond to DOD's comments regarding our recommendation to confirm the submunition and missile system's requirements and affordability before making a full-rate production decision. In response to DOD's comment that the revised antiarmor master plan confirms the system's requirements and affordability, we have noted in the report that we reviewed the revised master plan and concluded that it does not clearly confirm the submunition and missile system's requirement and affordability. The official reiterated DOD's position that the submunition and missile program requirements and affordability have been confirmed and will be reviewed again at the full-rate production decision point. Accordingly, we refocused our recommendation to specify that types of analyses we believe are needed to clearly confirm the system's requirements and affordability.

Scope and Methodology

To determine the affordability of the system, we analyzed its cost from June 1995 to December 1999. To do this, we examined the Army's Selected Acquisition Reports, which contain the cost and schedule of the system baseline and its original development estimates, as well as the most recent budgetary documentation for the program.

To determine if the system is justified in light of the changing environment, we used the results of our recent reviews of DOD's antiarmor capabilities and acquisition programs. We focused on our review of DOD's antiarmor weapons master plan, the Secretary of Defense's guidance, the out-year threat report, and the phased threat distribution. Also, we reviewed our analyses of the services' munitions requirements modeling processes.

We conducted our review from May 2000 through October 2000 in accordance with generally accepted government auditing standards.

We are sending copies of this report the Honorable William S. Cohen, Secretary of Defense; the Honorable Louis Caldera, Secretary of the Army; Jacob J. Lew, Director, Office of Management and Budget; and other interested congressional committees and parties. We will also make copies available to others upon request.

Please contact me on (202) 512-4841 or Bill Graveline on (256) 650-1400, if you or your staff have any questions concerning this report. Major contributors to this report were Beverly Breen, Tana Davis, and Laura Durland.

Sincerely yours,

James F. Wiggins
Director, Acquisition and Sourcing Management Team

Comments From the Department of Defense

OFFICE OF THE UNDER SECRETARY OF DEFENSE

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ACQUISITION AND TECHNOLOGY

29 AUG 2000

Mr. James F. Wiggins
Associate Director
Defense Acquisition Issues
National Security and International Affairs Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Wiggins:

This is the Department of Defense (DoD) response to the GAO Draft Report, "DEFENSE ACQUISITIONS: Need to Reassess Requirements for Brilliant Antiarmor Submunition," dated July 24, 2000 (GAO Code 707510/OSD Case 2056).

As noted in the attachment, the Department of Defense partially concurs with the GAO's proposed recommendation; the requirements and associated funding for Army Tactical Missile System Block II/Brilliant Antiarmor Submunition are defined in the Antiarmor Munitions Master Plan, July 2000.

The Department appreciates the opportunity to review the draft report.

George R. Schneiter
Director
Strategic and Tactical Systems

Attach
a/s

GAO DRAFT REPORT DATED JULY 24, 2000
(GAO CODE 707510/OSD CASE 2056)

"DEFENSE ACQUISITIONS: NEED TO REASSESS REQUIREMENTS FOR BRILLIANT ANTIARMOR SUBMUNITION"

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DEPARTMENT OF DEFENSE COMMENTS
ON THE GAO RECOMMENDATION

RECOMMENDATION: The GAO recommended that the Secretary of the Army not approve full-rate production for Brilliant Antiarmor Submunition/Army Tactical Missile System (BAT/ATACMS) until its requirements and affordability have been clearly confirmed. This includes submission of the congressionally-directed Antiarmor Master Plan containing data and analyses needed to properly support overall antiarmor weapons acquisition requirements, including the "BAT/ATACMS." Based on these analyses, the Secretary of Defense is expected to prioritize DoD's antiarmor acquisition plans, including "BAT/ATACMS." (p. 9/GAO Draft Report)

DOD RESPONSE: Partially concur. ATACMS Block II/BAT's requirements and affordability are confirmed in the Antiarmor Munitions Master Plan, July 2000. This plan was delivered to Congress on July 31, 2000. The requirements and affordability will be reviewed again at the Milestone III decision point.

ATACMS Block II/BAT is a missile that can be fired from one of two weapons platforms--MLRS 270A1 and the High Mobility Artillery Rocket System (HIMARS). The HIMARS is one of the weapon platforms which provides a technology bridge to the Objective Force and is scheduled for First Unit Equip in FY05. The Army is indeed planning for a Transformation to a lighter force; however, the report fails to emphasize that increased lethality is integral to facilitating planned Transformation. Precision guided munitions, such as ATACMS Block II/BAT and ATACMS Block II/P3I BAT, provide increased lethality and, in addition, reduce the munitions logistics requirements for the Objective Force, both key to Transformation success.

The procurement cost increases are in part the result of budget reductions, which have caused program stretchouts and low production rates. The termination of ATACMS Block IIA (600 systems) resulted in a significant negative impact to the ATACMS Block II/BAT and ATACMS Block II/P3I BAT production program. However, given the current funding profile, the ATACMS Block II/BAT program is affordable.

As part of the program reviews, the Department analyzes the effectiveness and warfighting contribution of antiarmor acquisition programs. However, the Department

does not prioritize the antiarmor programs in a top-to-bottom fashion. It is very difficult to formally rank these programs in a single list.

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