United States General Accounting Office

GAO

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

May 2000

DEFENSE ACQUISITIONS

Antiarmor Munitions Master Plan Does Not Identify Potential Excesses or Support Planned Procurements

GAO/NSIAD-00-67

Contents

Abbreviations

BAT/ATACMS	Brilliant Antiarmor Submunition/Army Tactical Missile System
DOD	Department of Defense
JSOW	Joint Stand-Off Weapon
MLRS	Multiple Launch Rocket System
MPIM	Multipurpose Individual Munition
RADAM	Remote Area Denial Artillery Munition
SADARM	Sense and Destroy Armor Munition
SFW	Sensor Fuzed Weapon
WAM	Wide Area Munition

GAO
Accountability * Integrity * Reliability

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

National Security and
International Affairs Division

B-282444

May 5, 2000

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

Dear Mr. Chairman:

In its report on the Fiscal Year 1999 Defense Appropriations Bill, the House Committee on Appropriations expressed concern that the military services are continuing to develop and procure an increasing number of tank-killing weapons at a time when potential adversaries have smaller armored forces. The Committee also questioned whether current antiarmor acquisition plans are appropriate and directed the Secretary of Defense to develop an Antiarmor Munitions Master Plan. According to the report, the plan should identify the projected armored threat and the projected quantity of all antiarmor weapons, whether fielded or in development, with the purpose of identifying and eliminating excess antiarmor capability. The Department of Defense (DOD) was directed to submit the plan with its fiscal year 2000 budget submission.

Before the Master Plan was issued, we reported that DOD's inventory of antiarmor weapons had remained at 1990 Cold War levels (in terms of overall quantities and types), while the number of armored targets under current planning scenarios had dropped to less than 20 percent of the number considered in 1990.[1] Previously, guidance issued by the Secretary of Defense establishing the most demanding level of threat U.S. forces must be prepared to counter and setting forth the war-fighting strategy had been based on a large-scale Soviet/Warsaw Pact threat involving thousands of armored vehicles; but the guidance is now based on a much smaller armored threat from two regional conflicts occurring simultaneously.[2]

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

[2]The Defense Intelligence Agency identifies the number and types of enemy armored targets in each scenario that each service needs to destroy. The commanders in chief allocate responsibility for the targets among the military services. On the basis of these allocations, the services determine their antiarmor weapon requirements.

Since 1990, DOD has invested billions of dollars to further increase its antiarmor weapon capabilities. According to the President's fiscal year 2000 budget submission, DOD expects to spend about $17.9 billion developing and producing additional antiarmor weapons from fiscal year 2000 until all the programs are completed.

The plan[3] was sent to Congress on August 25, 1999, several months after the fiscal year 2000 budget submission. At your request, we reviewed DOD's Antiarmor Munitions Master Plan to determine whether it provided the data and analyses necessary to (1) identify excess antiarmor weapons currently in the inventory or under development and (2) support current acquisition plans.

Results in Brief

DOD's Antiarmor Munitions Master Plan did not identify any excess antiarmor weapons or provide the data and analyses needed to identify such excesses. Instead of identifying the types and quantities of antiarmor weapons needed to meet requirements under current planning scenarios, the plan only described the types of antiarmor weapons in the inventory and under development and identified the number and types of armored systems possessed by nine countries it considered potentially hostile to the United States. The total capabilities and quantities of the armored systems possessed by these countries substantially exceeds those in the current two-regional conflict threat scenario. The plan acknowledged that the tank threat from the countries identified in that scenario is low, but the plan did not identify potential excesses in antiarmor weapons resulting from major reductions in the armor threat since 1990. Further, the modeling practices the services used to identify individual antiarmor weapons quantity requirements routinely generated excessive requirements. Specifically, we found that (1) the Air Force added more targets to the model than it is responsible for, (2) the services added large quantities of weapons to their models to allow for uncertainties, (3) the services projected the use of sophisticated and expensive antiarmor guided weapons against unarmored targets, and (4) the Marine Corps and the Army did not always accept their model's results and used manual calculations to support higher antiarmor weapon requirements.

[3]The plan was classified as secret.

The plan provided little data and analyses to support the services' plans to spend about $17.9 billion on 15 antiarmor weapon acquisition programs. In support of acquiring the new systems, the plan described various types of improvements and technological advances in the designs of armored systems and noted the potential proliferation of armored systems with these advanced designs. The plan also described the capabilities of individual antiarmor weapons that were being acquired by the services and noted that the new weapons would provide improved lethality and effectiveness. However, the plan also indicated that the existing antiarmor weapon inventory is more than adequate to defeat the threat as defined in the Secretary of Defense's planning guidance. Further, the plan did not assess the effects of combined joint service capabilities and changes in war-fighting strategies on the requirements for these weapons. For example, under the 1990 Cold War threat scenario, the Army was expected to play the dominant role in halting a massive Soviet/Warsaw Pact armored invasion, but under current war-fighting plans, the Air Force is to have the largest (and still growing) share of armored targets. Nevertheless, the Army's planned procurement costs for antiarmor weapons from fiscal year 2000 to completion account for about 80 percent ($14 billion) of DOD's total procurement budget for antiarmor weapons. An assessment of the joint antiarmor capabilities of the services and changes in war-fighting requirements could identify opportunities to significantly reduce requirements for certain antiarmor weapons currently being acquired.

We are issuing a matter for congressional consideration either (1) to restrict funding for antiarmor weapons until the Secretary of Defense provides Congress with the antiarmor weapon analysis directed in the conference report on the fiscal year 2000 appropriations bill or (2) to establish an annual funding cap on the procurement of antiarmor weapons and require that DOD establish priorities among the multitude of antiarmor weapons now available or being developed.

Background

DOD currently has a large inventory of 40 different types of antiarmor weapons capable of destroying tanks, armored combat vehicles, and artillery. These weapons include various types of ground- and air-fired guided missiles, tank rounds, rockets, and mines. DOD is currently funding the production of 15 new antiarmor weapon systems.[4]

DOD issued its first Antiarmor Master Plan in 1985 and updated it annually until 1990. The 1990 Antiarmor Master Plan still reflected the Cold War threat and focused on the antiarmor weapons that would be needed to prevail in a Central European conflict. The plan was not updated until 1999. In the October 1999 conference report on the fiscal year 2000 Defense appropriation bill,[5] the congressional conferees noted that the 1999 Master Plan lacked the analyses needed to support the services' claimed antiarmor weapons requirements. In their report, the conferees directed the Secretary of Defense to provide another antiarmor weapon analysis with the fiscal year 2001 budget request. Although the budget has been submitted, the Secretary has not yet provided the analysis as directed.

Master Plan Did Not Provide Data and Analyses Needed to Identify Excess Weapons

The 1999 Antiarmor Munitions Master Plan did not identify any excess antiarmor weapons or provide the data and analyses needed to identify any such excesses. Key to identifying any excess antiarmor weapons is an assessment of the types and quantities of antiarmor weapons needed to defeat the threat outlined in the planning scenarios.[6] Although such data is available, the plan only described various types of antiarmor weapons in the inventory or under development and identified the number and types of armored systems possessed by nine countries it considered potentially hostile to the United States—including some countries of the former Soviet Union. The total capabilities and quantities of the armored systems possessed by these countries substantially exceeded those in current threat scenarios. According to DOD officials, no attempt was made to determine whether the weapon systems presented in the Master Plan were justified on

[4]The Antiarmor Master Plan shows 19 systems under procurement. One of them, however, is for a modification, and three others are for practice rounds. Procurements of combat weapons thus total 15.

[5]H.R. Conference Report 106-371, page 214 (1999).

[6]According to DOD Instruction 3000.4, the Under Secretary of Defense for Policy shall develop policy guidance on munition requirements in the Defense planning guidance.

the basis of the threat depicted in the Secretary of Defense's planning guidance.

Plan Did Not Identify Potential Excesses Resulting From Reduced Threat

The plan did not assess the impact of reductions in the threat scenarios on antiarmor weapons requirements. As we previously reported, the number of potential enemy armored targets outlined in the planning guidance has decreased considerably since 1990.[7] During the Cold War, the services considered the greatest threat to be a massive land attack spearheaded by thousands of armored vehicles in Central Europe. Today's conditions, however, are significantly different, and military planners consider smaller regional conflicts as the basis for developing war-fighting plans and requirements. According to the Defense Intelligence Agency's latest biannual out-year threat report, issued in 1997, the number of armored targets that the United States is likely to face is less than 20 percent, the number considered in 1990.[8]

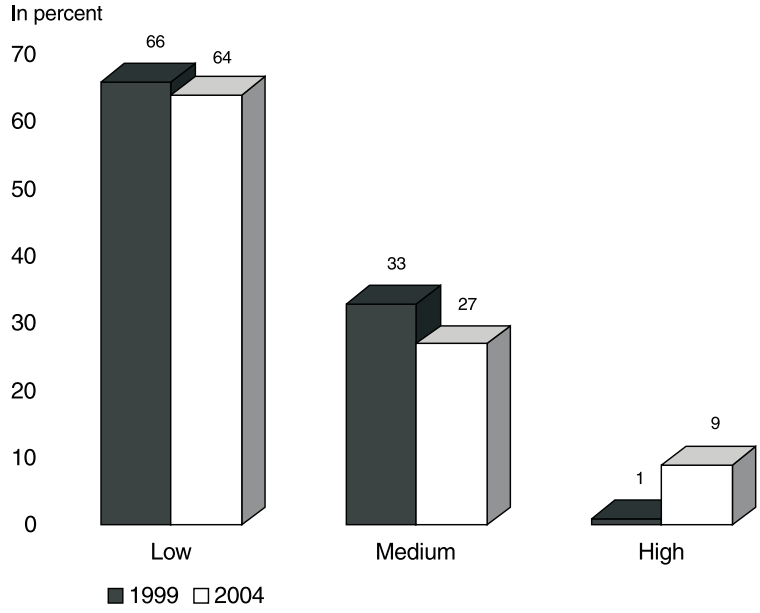
Iraq and North Korea are currently the most likely opponents the United States would face in a regional conflict scenario. The armored systems possessed by these two counties were included in the Master Plan but accounted for a small percentage of the total number it identified.[9] In addition, the plan concluded that the armored systems that would be used by the two countries under the two-conflict scenario are low technology threats. Our review of the Secretary of Defense's planning guidance shows that the two countries are unlikely to acquire significant improvements in their armored capabilities in the foreseeable future. Intelligence officials believe the likelihood that either country will obtain such technologies in significant quantities is extremely low. Figure 1 shows a comparison of tank technology levels of the two countries in 1999 and projected in 2004. It shows that high technology tanks are expected to increase from 1 percent of the total in 1997 to 9 percent in 2004, with low technology tanks still accounting for 64 percent of the total in 2004.

[7] *Defense Acquisitions* (GAO/NSIAD-99-105, July 22, 1999).

[8] The next report is scheduled to be released later this year.

[9] Russia and the Ukraine, both of the former Soviet Union, account for over half of the systems identified in the plan.

Figure 1: Comparison of Technology Levels of Main Battle Tanks of the Countries in the Two-Regional Conflict Threat Scenario



Source: DOD's Antiarmor Munitions Master Plan.

According to intelligence officials, the proliferation of high technology systems is not materializing as quickly as originally estimated, and the two countries are economically disadvantaged. Further, an arms embargo and sanctions by the United Nations limit one country from procuring additional weapons.

Quantity Requirements for Antiarmor Weapons May Be Significantly Overstated

Each of the military services determines the type and quantities of antiarmor weapons it needs on the basis of target allocations provided by the commanders in chief. On the basis of the number and types of armored targets they are assigned, the services determine the types and quantities of antiarmor weapons they need to (1) defeat the assigned targets, (2) equip forces not assigned to the two-theater conflict, (3) ensure that forces assigned to the conflict have a ready supply of weapons left over after the conflict ends, and (4) conduct training. The services use war-fighting simulation models that determine the number of weapon systems needed to defeat the threat. Each service is responsible for designing its own threat models and determining its underlying assumptions.

Our review of how the services determine their antiarmor weapon requirements found several modeling practices that routinely generated excessive requirements. Specifically, we found the following:

- The Air Force added more targets to the model than were assigned. For example, it increased the number of allocated targets by 13 to 21 percent—depending on the type of target—for additional flexibility.
- The services added large quantities of weapons to their models to allow for uncertainties. For example, according to Army data, an average of only 3 percent of its direct fire antiarmor weapons would be used against assigned targets, with the remaining 97 percent required to compensate for uncertainty factors such as missing targets and shooting at wrong targets.
- The services projected the use of sophisticated and expensive antiarmor guided weapons against unarmored targets. For example, two of the Air Force's newer and more advanced antiarmor weapons (the Joint Stand-Off Weapon BLU-108 variant and the Sensor Fuzed Weapon) are expected to be used against unarmored targets over 60 percent of the time.
- In some cases, the Marine Corps and the Army did not accept their models' results and used manual calculations to support higher requirements. For example, the Marine Corps increased its requirements for the Predator short-range assault weapon by 289 percent over the model's calculation.

The services' antiarmor weapon requirements' modeling practices are discussed in more detail in appendix I.

Plan Provided Limited Support for New Antiarmor Weapon Acquisitons

The Antiarmor Munitions Master Plan did not provide the data and analyses necessary to support DOD's current acquisition plans. The military services currently have 15 different types of antiarmor weapons under development or in production. According to the President's fiscal year 2000 budget submission,[10] DOD plans to spend a total of over $24 billion procuring these weapon systems, of which $17.9 billion will be used from fiscal year 2000 through program completion. Of the $17.9 billion, $8.3 billion will be spent in fiscal years 2000-05 and $9.5 billion in fiscal year 2006 and beyond. Appendix II shows planned costs and procurement quantities of each

[10]DOD classifies the costs of the systems contained in the Antiarmor Munitions Master Plan. We used unclassified fiscal year 2000 budget submission documentation to determine costs.

weapon system based on the fiscal year 2000 budget request. Appendix III shows funding by fiscal year from 2000 through 2005 and to completion.

As support for acquiring the new systems, the plan described various types of improvements and technological advances in armored system designs and noted the potential proliferation of armored systems with these advanced designs. The plan also described the capabilities of individual antiarmor weapons being acquired by the services and noted that the new weapons would provide improved lethality and effectiveness. The plan indicated that the existing inventory of antiarmor weapons is more than adequate to defeat the threat as defined in the scenario. The plan stated that "by preparing for a North Atlantic Treaty Organization/Warsaw Pact conflict involving massive Soviet armed forces, the United States would certainly be prepared for conventional regional conflicts." Further, the plan did not assess the effects that combined joint service antiarmor capabilities and changes in war-fighting strategies could have on requirements for new systems.

Master Plan Did Not Assess Potential Excesses Resulting From Joint Service Capabilities

The plan did not assess the impact of joint service antiarmor capabilities on acquisition requirements. Such an assessment could identify unnecessary overlap and duplication among the services' antiarmor capabilities. Instead, the plan simply incorporated the services' antiarmor inventory data and procurement plans without assessing them on a joint basis. While each antiarmor weapon acquisition program described in the plan has gone through the requirement determination and acquisition approval process in each service and in DOD, we previously reported that these processes have not been effective in preventing overlap and duplication in weapon capabilities and requirements.[11]

In our prior work, we found that the services conduct extensive analyses to justify major acquisitions but that these analyses can be narrowly focused and do not fully consider alternatives. For example, when the Navy carried out its analyses to justify the development of an antiarmor variant of the Joint Standoff Weapon, it did not fully consider available alternatives such as the Air Force's Sensor Fuzed Weapon with Wind Corrected Munitions Dispenser, which uses the same submunition, carries more submunitions, and is cheaper than the proposed variant. However, the Joint Standoff

[11] *High-Risk Series: An Update* (GAO/HR-99-1, Jan. 1999) and *Weapons Acquisitions: Guided Weapon Plans Need to Be Reassessed* (GAO/NSIAD-99-32, Dec. 9, 1998).

Weapon was chosen as the more cost-effective weapon. A subsequent Air Force analysis showed that the Sensor Fuzed Weapon would be more cost-effective and potentially more suitable.

DOD has a structure and process to review requirements from a joint perspective, but they are not effective. Operational requirements for new weapons are reviewed by all the services, the Defense Acquisition Board, and the Joint Requirements Oversight Council to help define and validate system requirements, examine trade-offs, and explore alternatives. In 1998, however, we reported that officials in both the Office of the Joint Chiefs of Staff and the Office of the Secretary of Defense view their roles as members of these organizations in determining weapon requirements as only advisory.[12] We concluded that DOD's lack of an effective process to assess joint mission capabilities and requirements adequately makes the Department unable to determine the need for and priority of planned antiarmor investments.

In addition to not assessing joint service capabilities, the plan did not take into account allied forces and their contribution to antiarmor capability. DOD expects its allies to be responsible for 29 percent of the anticipated threat in the two-conflict scenario.

Plan Did Not Identify Potential Weapon Excesses From Changes in War-fighting Plans

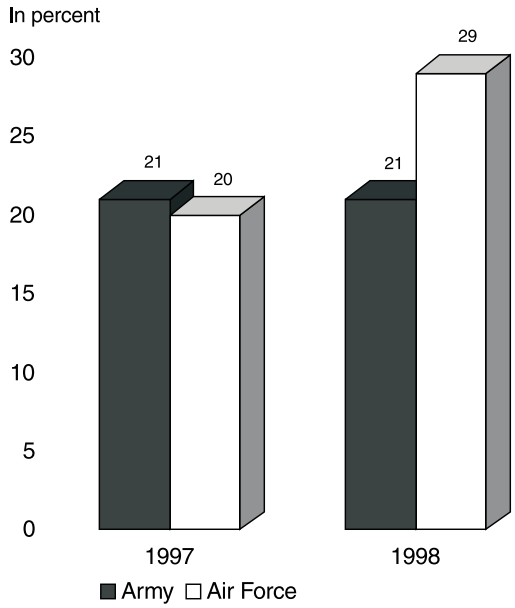
Under the1990 Cold War threat scenario, the Army was expected to play the dominant role in halting a massive Soviet/Warsaw Pact armored invasion. However, current war-fighting plans, based on the threat, call for the Air Force to have the largest (and still growing) share of armored targets. Nevertheless, the Army's planned procurement costs for antiarmor weapons from fiscal year 2000 to completion account for about 80 percent ($14 billion) of DOD's total procurement budget for antiarmor weapons.

Depending on how they plan to conduct the war, the commanders in chief allocate the number of targets contained in the planning scenarios among individual services. According to these plans, the Air Force has the highest percentage of total mobile armored targets, and its share of these targets has increased from 20 to 29 percent. The Navy's share has increased from 6 to 9 percent; the Marine Corps' target share has remained constant at about 12 percent. The Army's share has remained the same at about 21 percent.

[12] *Weapons Acquisitions: Guided Weapon Plans Need to Be Reassessed* (GAO/NSIAD-99-32, Dec. 9, 1998).

The U.S. allies' share has decreased from 40 to 29 percent. Figure 2 shows the percentage of all mobile armored targets in two hypothetical major conflicts for the Army and the Air Force in 1997 and 1998.

Figure 2: Percentage of Mobile Armored Targets Allocated to the Army and the Air Force, 1997-98



Source: DOD's Phased Threat Distribution.

The antiarmor weapon quantity requirements described in the Antiarmor Munitions Master Plan also do not reflect changes in the Army's war-fighting strategy. After submitting the Master Plan, the Army Chief of Staff announced plans to develop a lighter and more mobile force in response to concerns about the difficulties and limitations of transporting and supporting the large and heavy M1A1 tank and other armored systems. To respond more quickly to contingencies, and to become more mobile and more rapidly deployable, the Army has begun transitioning to a lighter, smaller, more fuel-efficient and reliable force. Although the transition will take a number of years, it will significantly impact the Army's antiarmor weapon requirements. However, the Master Plan shows substantial investments in heavy armored capabilities such as the improved 120-millimeter tank rounds.

Congress Found Master Plan Inadequate

In its October 1999 conference report on the fiscal year 2000 defense appropriation bill, the conferees stated that the 1999 Master Plan did not show any evidence of future prospects for reducing the number of antiarmor programs and little evidence of rigorous critique of claimed requirements.[13] The congressional conferees directed the Secretary of Defense to provide, with his fiscal year 2001 budget request, an evaluation of (1) the joint effectiveness of existing antiarmor weapons in addressing the threat described in defense planning guidance and (2) the ability of planned antiarmor weapons to fill the shortfalls in capabilities described in threat scenarios. DOD has submitted its fiscal year 2001 budget, but the Secretary has not yet provided the analysis directed by the conference report.

Conclusions

The Antiarmor Munitions Master Plan did not provide the data and analyses needed to identify any excesses in antiarmor weapons or to support current antiarmor weapon acquisition plans. Specifically, the plan did not address the joint effectiveness of existing antiarmor weapons in addressing the threat described in the Secretary of Defense's guidance or the way planned antiarmor weapons are expected to fill any shortfalls in capabilities described in threat scenarios. Although the congressional conferees directed the Secretary to provide such data and analyses with the submission of the fiscal year 2001 defense budget request, the Secretary has not yet done so. As a result, congressional decisionmakers have limited ability to assess the services' plans to spend about $17.9 billion to develop and produce antiarmor weapons from fiscal year 2000 to program completion.

Matter for Congressional Consideration

Should Congress not receive the data and analyses directed by the conference report on the fiscal year 2000 Defense appropriation bill, it should consider restricting fiscal year 2001 funding for antiarmor weapons until such information is provided. Alternatively, Congress may wish to impose an annual funding cap on the procurement of antiarmor weapons to permit some modernization but requiring DOD to establish priorities and choose among the multitude of antiarmor options now available or being developed.

[13]H.R. Conference Report 106-371, page 214 (1999).

Agency Comments and Our Evaluation

In commenting on a draft of our report, DOD stated that we had identified several areas where the munitions requirement process could be improved and noted that a working group had been tasked to review the existing process and recommend changes. DOD also offered several explanations of why additional antiarmor weapons beyond those needed to kill expected targets may be justified. They stated that the requirements process also permits the services to base their requirements on the amount of munitions needed to fully arm a given force structure. Further, they stated that, while the services plan to fight in fully joint operations, each service equips and trains its forces to ensure that it retains strategic and tactical flexibility. Finally, DOD stated that its update of the Antiarmor Munitions Master Plan would address these issues more fully. If DOD's working group addresses the problems that we identified with the requirements process, we believe that will be a step in the right direction.

Nevertheless, DOD was directed to identify and eliminate excess antiarmor capability. However, the August 1999 Plan was found to be inadequate to support the services' claimed antiarmor requirements. Subsequently, DOD was directed to submit additional data and analyses of its antiarmor weapons and capabilities with its fiscal year 2001 budget. However, it did not do so. Accordingly, we continue to believe that Congress should consider restricting DOD's funding for antiarmor weapons until such information is provided.

DOD's comments are reprinted in their entirety in appendix IV.

Scope and Methodology

To determine whether DOD's Antiarmor Munitions Master Plan provided the data and analyses necessary to identify excess antiarmor weapon capability, we evaluated the plan's results and discussed the plan with representatives from the Office of the Under Secretary of Defense, Acquisition and Technology, Washington, D.C.; the Office of Program Analysis and Evaluation, Washington, D.C.; and the Institute for Defense Analysis, Alexandria, Virginia. We compared the plan's threat with the Secretary of Defense's guidance, the out-year threat report, and the phased threat distribution. We discussed the information with representatives from the Defense Intelligence Agency, Bolling Air Force Base, Maryland, and the U.S. Army Deputy Chief of Staff for Intelligence, Crystal City, Virginia. We also analyzed DOD's process for developing the requirement quantities depicted in the Master Plan. We analyzed the services' munitions requirement models that generated the different quantities of antiarmor

weapons needed to defeat the current threat as defined in the Defense Intelligence Agency's out-year threat report. We discussed the requirement data and our analyses with representatives from the Center for Army Analysis, Fort Belvoir, Virginia; the Air Force Director for Operational Requirements, Arlington, Virginia; the Deputy Chief of Naval Operations Assessment Division, Washington, D.C.; and the Marine Corps Combat Development Command, Quantico, Virginia.

To determine whether the Master Plan provided the necessary data and analyses necessary to support DOD's current acquisition plans, we compared the weapon systems contained in the plan with DOD's current acquisition plans. We reviewed the fiscal year 2000 budget submission, the commanders in chief's target allocations, changes in war-fighting strategies, and our prior reports.

We conducted our review from May 1999 through January 2000 in accordance with generally accepted government auditing standards.

We are sending copies of this report to the Honorable William S. Cohen, Secretary of Defense; the Honorable Louis Caldera, Secretary of the Army; the Honorable F. Whitten Peters, Acting Secretary of the Air Force; the Honorable Richard Danzig, Secretary of the Navy; General James L. Jones, Commandant of the Marine Corps; 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 at (202) 512-4841 or William Graveline at (256) 650-1400 if you or your staff have any questions concerning this report. Major contributors to this report are listed in appendix V.

Sincerely yours,

James F. Wiggins
Associate Director
Defense Acquisitions Issues

Antiarmor Requirements Modeling Practices

The services are responsible for destroying the number of targets assigned to them by the commanders in chief. The services use war-fighting simulation models to determine the number of weapon systems needed to defeat the threat. Our review of these models found several practices that routinely generate excess requirements.

The commanders in chief's target allocations include an optional flexibility factor to either increase or decrease the service's share of allotted targets. The Air Force used this factor to increase the number of allocated armored targets in its model by 13 to 21 percent (the percentage varied according to the target type). The Navy and the Army did not use this factor in their models, and the Marine Corps said it was unable to determine whether the factor had been included because only the results of the model are available, not the input data. Representatives of the commanders in chief stated that they believe using the flexibility factor results in overstated requirements and that a flexibility factor is not needed because their office goes through a very rigorous process in developing initial target allocations. They recommended that the flexibility factor be eliminated in the next target allocation. A new target allocation process is being developed, but it is unknown at this time whether the flexibility factor will be included.

All the services incorporated large uncertainty factors into their models, increasing the numbers of needed combat weapons well beyond those needed to destroy allocated targets. Uncertainty factors include logistical delays or losses, poor weather, and wrong targets. According to Army data, an average of only 3 percent of its combat requirement would be used to destroy assigned targets; additional weapons needed to compensate for uncertainty factors account for the remaining 97 percent. Table 1 shows the percentage of Army direct fire antiarmor weapons used against allocated targets. For example, only 1.1 percent of the Army's Javelin system combat requirement is used for weapons needed to destroy assigned targets.

Table 1: Army Direct Fire Antiarmor Weapons Used Against Targets, as a Percentage of Combat Requirement

Weapon	Weapons fired against targets as a percentage of combat requirement
Javelin	1.1
Copperhead	2.1
M919 25-mm gun round	2.8
TOW Missile	3.6
120-mm tank rounds	6.6
2.75-in. Hydra rockets	8.2
Hellfire	11.1
Longbow	14.5

In the Air Force, weapons expected to be used against assigned targets accounted for an average of 60 percent of the combat usage requirement. The remaining 40 percent is attributed to uncertainties. The Marine Corps was unable to provide us with percentage figures. The Navy uses three classified uncertainty factors similar to those of the other services. Some of these factors, such as poor weather, are already taken into account by the commanders in chief. When they develop initial target allocations, the commanders in chief allocate more targets than the number available in the theaters to compensate for some of these uncertainties.

The Navy/Marine Corps Air, and the Air Force also use a significant portion of some expensive antiarmor weapons against unarmored targets. This practice also increases requirements. In its models, for example, the Navy/Marine Corps Air uses about 80 percent of its TOW and Hellfire missiles against unarmored and lower-value targets such as trucks. It could instead use its less expensive saboted light armor penetrator, high explosive antiarmor munition, or other weapons and save the more expensive and more capable weapons for more heavily armored targets. Similarly, two of the Air Force's newer and more advanced antiarmor weapons (the Joint Stand-Off Weapon BLU-108 variant and the Sensor Fuzed Weapon) are expected to be used against unarmored targets over 60 percent of the time. All four weapons were designed and justified primarily as tank-killing weapons. Table 2 shows the percentage of combat requirements for Air Force and Navy/Marine Corps Air antiarmor weapons to be used against armored and other targets.

Table 2: Air Force and Navy/Marine Corps Air Antiarmor Weapon Usage Against Target Types

Weapon	Percent used against tanks	Percent used against armored combat vehicles	Percent used against artillery	Percent used against other targets
Air Force				
CBU-87	<1	<1	0	99
CBU-103	3	7	3	87
Sensor Fused Weapon	21	6	10	62
JSOW (BLU-108)	12	13	13	61
Maverick G	0	0	74	25
Maverick K	41	19	27	14
Maverick H	65	4	30	1
Maverick D	100	0	0	0
Navy/Marine Corps Air				
IR Maverick	16	4	<1	79
Hellfire	10	6	4	80
Laser Maverick	15	4	<1	81
TOW	10	6	4	80
Rockeye	36	23	16	25
JSOW (BLU-108)	71	23	6	<1

The Army and the Navy/Marine Corps Air also allowed their models to destroy more targets than allocated, again increasing weapon usage. According to the most recent analyses available, the Army and the Navy/Marine Corps Air destroyed 17 percent and 21 percent more tanks, respectively, than they were assigned, inflating their weapon requirements.

Finally, in some cases, the Marine Corps Ground and the Army did not accept the number of weapon systems recommended by their models for combat usage. In their latest requirements report, they instead favored using a higher estimate obtained by a manual calculation. They told us that the numbers provided by the models had been too low and that manual calculations had been necessary. The Marine Corps Ground compared the results of the model with a manual calculation of the number of munitions each weapon can hold and selected the higher number. Table 3 shows the increases in some Marine Corps Ground weapon requirements because of these higher manual calculations.

Table 3: Comparison of Marine Corps Ground Model Results and Manual Calculations

Weapon	Combat usage based on model results	Combat usage based on manual calculations	Combat usage in latest requirement report	Percent above modeled requirement
Predator	1,139	4,523	4,428	289
M829 tank round	6,030	13,050	13,050	116
TOW 2A/B missile	5,172	10,837	10,836	109
Javelin	1,264	2,214	2,214	75
Saboted Light Armor Penetrator ammunition	647,010	541,680	758,989	17
25-mm gun round	169,232	124,335	170,288	0.6
Dual Purpose Improved Conventional Munition	48,879	23,882	48,879	0
Copperhead	1,335	99	1,335	0
High Explosive Antiarmor rocket	10,216	4,640	10,216	0

The Army disregarded its modeled results when calculating one of its antiarmor weapon requirements. According to Army officials, the Army did not use the model's results if weapon usage results were so low that other formulas based on usage could not be calculated. This was the case, they said, for the Javelin antiarmor weapon. According to the Army's May 1999 requirement update, only 180 Javelins were expected to be fired at targets in the model. This low usage was insufficient to calculate the remaining portion of the combat requirement using the model formula. Consequently, the Army used a manual calculation to finalize the combat requirement. Using the manual calculation, the number of Javelins needed for combat was determined at 16,848.

Quantity and Cost of Antiarmor Systems Under Development and Procurement

(then-year dollars in millions)

Weapon	Service	Quantity to be procured	Total cost	Cost through fiscal year 1999	Cost, fiscal year 2000 to completion
Brilliant Antiarmor Submunition/Army Tactical Missile System (BAT/ATACMS)	Army	19,554	$4,284	$149	$4,135
M26 Multiple Launch Rocket System (MLRS)	Army	12,378	3,485	109	3,376
Joint Stand-Off Weapon (JSOW) BLU-108	Navy/ Air Force	5,955	2,369	22	2,347
Javelin	Army/Marine Corps	26,956	3,324	1,494	1,830
Sense and Destroy Armor Munition (SADARM)	Army	50,000	2,057	266	1,792
Wide Area Munition (WAM)	Army	33,991	1,708	49	1,658
Longbow Hellfire	Army	12,905	2,092	1,005	1,087
Sensor Fuzed Weapon (SFW)	Air Force	4,237	1,434	925	509
Predator	Marine Corps	18,190	492	0	492
Tank round M829A2/E3	Army	242,000	1,694	1,438	256
Remote Area Denial Artillery Munition (RADAM)	Army	428,000	194	0	194
M919 25-mm gun round	Army	1,791,000	242	188	54
Multipurpose Individual Munition (MPIM)	Army	3,521	147	0	147
Volcano	Army	184,000	412	412	0
M830A1 tank round	Army	76,000	533	533	0
Total			**$24,467**	**$6,590**	**$17,877**

Projected Antiarmor Weapon Production Funding, Fiscal Year 2000 to Completion

(then-year dollars in millions)

Weapon	2000	2001	2002	2003	2004	2005	2006 to completion
BAT/ATACMS	$226	$228	$264	$374	$340	$372	$2,331
M26 MLRS Rocket	3	10	41	63	66	98	3,095
JSOW BLU 108	111	246	233	227	231	241	1,058
Javelin	400	437	413	406	41	52	81
SADARM	55	64	77	93	155	84	1,264
WAM	10	23	56	57	57	57	1,398
Longbow Hellfire	308	300	236	195	26	22	0
SFW	61	102	88	87	86	85	0
Predator	0	27	27	28	54	55	301
Tank round M829A2/M829E3	0	0	41	72	72	71	0
RADAM	48	48	49	49	0	0	0
M919 25-mm gun round	30	24	0	0	0	0	0
MPIM	0	2	24	23	48	50	0
Volcano	0	0	0	0	0	0	0
M830A1 tank round	0	0	0	0	0	0	0
Total	**$1,252**	**$1,511**	**$1,549**	**$1,674**	**$1,176**	**$1,187**	**$9,528**

Comments From the Department of Defense

ACQUISITION AND TECHNOLOGY

OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON
WASHINGTON DC 20301-3000

13 APR 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 GAO Draft Report, "DEFENSE ACQUISITIONS: Antiarmor Weapons Master Plan Does Not Identify Potential Excesses or Support Planned Procurements," February 15, 2000 (GAO Code 707414/OSD Case 1946-X).

In 1999, the House Committee on Appropriations questioned whether current antiarmor acquisition plans were appropriate, and directed the Secretary of Defense to develop an Antiarmor Weapons Master Plan. This plan was sent to Congress on August 25, 1999. The GAO review found the submitted plan was inadequate to support the Department's acquisitions plans, and noted that it did not address the joint effectiveness of existing antiarmor munitions against the threat.

The current acquisition plans of DoD have all been supported by the use of the Capabilities Based Munitions Requirements (CBMR) process, which incorporates Service, OSD, and Joint Staff review. The GAO report has identified several areas where the CBMR process could be improved; a working group led by the Joint Staff has been tasked to review the existing process and to recommend changes. The CBMR process addresses several areas which are key to understanding the Department's antiarmor weapons acquisition goals. These include the need to minimize friendly force casualties by reducing exposure to counterfires, through features such as lower signatures, longer ranges, and higher lethality (which generates fewer repeated attacks). Other key issues include shelf-life expiration and reliability concerns, training requirements, logistical requirements, and safety concerns.

Relative to the Matter for Congressional Consideration, the essence of the GAO's concern is their perception that the munitions requirements process is flawed. The imposition of an annual funding cap on the procurement of antiarmor weapons has no bearing on the way the requirements for these weapons are established. The CBMR process allows military planners to base munitions requirements on the following concepts:

- A given force structure, armed to its designed military capability.

- The estimated quantity of munitions to defeat a specified threat with that force structure.

These concepts are consistent with the national military strategy of flexible and selective engagement to protect U.S. interests throughout the world. This clearly allows the Commanders-in-Chief and the Services to base their requirements upon both the number of targets that need to be destroyed and the amount of munitions needed to fully arm a given force structure. It is not just one or the other, but rather the combination of both.

The GAO report correctly identified that in our analysis relatively few munitions (compared to those planned for procurement) may be used. However, since we cannot predict which platforms will experience the immediacy of tactical need, the CBMR process explicitly acknowledges as legitimate the need to ensure that each platform has a basic load of ammunition.

The services do intend and plan to fight in fully joint operations. However, occasionally intervening circumstances such as weather, rules of engagement, terrain obstructions, or collateral damage considerations preclude the routine substitution of one form of joint firepower for another. In order to field a robust force fully capable to support operations across the operational spectrum, each service equips and trains its forces to ensure that it retains strategic and tactical flexibility.

Our planned submission of an update to the Antiarmor Weapons Master Plan will address all these issues more fully.

Thank you for the opportunity to comment on your draft report.

George R. Schneiter
Director
Strategic and Tactical Systems

GAO Staff Acknowledgments

Acknowledgments

Beverly Breen, Laura Durland, William Gillies, Bobby Hall, and Roy Karadbil made key contributions to this report.

Ordering Information

The first copy of each GAO report is free. Additional copies of reports are $2 each. A check or money order should be made out to the Superintendent of Documents. VISA and MasterCard credit cards are accepted, also.

Orders for 100 or more copies to be mailed to a single address are discounted 25 percent.

Orders by mail:
U.S. General Accounting Office
P.O. Box 37050
Washington, DC 20013

***Orders by visiting*:**
Room 1100
700 4th St. NW (corner of 4th and G Sts. NW)
U.S. General Accounting Office
Washington, DC

Orders by phone:
(202) 512-6000
fax: (202) 512-6061
TDD (202) 512-2537

Each day, GAO issues a list of newly available reports and testimony. To receive facsimile copies of the daily list or any list from the past 30 days, please call (202) 512-6000 using a touchtone phone. A recorded menu will provide information on how to obtain these lists.

Orders by Internet:
For information on how to access GAO reports on the Internet, send an e-mail message with "info" in the body to:

info@www.gao.gov

or visit GAO's World Wide Web home page at:

http://www.gao.gov

To Report Fraud, Waste, or Abuse in Federal Programs

Contact one:

- **Web site: http://www.gao.gov/fraudnet/fraudnet.htm**
- **e-mail: fraudnet@gao.gov**
- **1-800-424-5454 (automated answering system)**

United States
General Accounting Office
Washington, D.C. 20548-0001

Official Business
Penalty for Private Use $300

Address Correction Requested

Bulk Rate
Postage & Fees Paid
GAO
Permit No. GI00