REPORT BY THE U.S.

General Accounting Office

DOD'S Fiscal Year 1986 Ammunition Procurement And Production Base Programs

The President's fiscal year 1986 Defense budget request includes $5.3 billion for ammunition items and $368.4 million for enhancing ammunition production facilities.

At the request of the Subcommittees on Defense of the House and Senate Committees on Appropriations, GAO reviewed the military services' requests for funds to buy ammunition and modernize ammunition production facilities.

GAO believes about $1.1 billion of the ammunition requests and $129.2 million of the Army's production facilities request should not be provided.

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NATIONAL SECURITY AND
INTERNATIONAL AFFAIRS DIVISION

B-216058

The Honorable Joseph P. Addabbo
Chairman, Subcommittee on Defense
Committee on Appropriations
House of Representatives

The Honorable Ted Stevens
Chairman, Subcommittee on Defense
Committee on Appropriations
United States Senate

As requested, we reviewed the military services' justification for their fiscal year 1986 appropriation requests for ammunition and the Army's request for ammunition production base funding. This letter provides an overview of our findings, and the appendixes provide details.

The President's fiscal year 1986 Defense budget request includes about $5.3 billion for ammunition items and $368.4 million for enhancing ammunition production facilities. In our opinion, about $1.1 billion of the ammunition requests and $129.2 million of the Army's production base request should not be provided.

In addition, two Army and three Navy items have problems which are not severe enough to conclude funds for these items could be deleted, but which we believe need to be brought to the Committees' attention.

ARMY AMMUNITION PROGRAM

The Army's $2.3 billion request for ammunition is, in our opinion, overstated by $580.2 million for the following reasons:

--$198.2 million involves 12 items for which program quantities provide excess inventory.

--$97.6 million for propelling charges and fuzes would buy more charges and fuzes than needed for the projectiles with which they are used.

--$33.6 million is for four items with overstated unit costs.

--$49 million is for three items which should not be procured until certain critical technical problems are resolved.

--$88.1 million involves eight items which do not require fiscal year 1986 funds to meet delivery schedules.

--$113.7 million is for three items for which funds are not needed until fiscal year 1987 to meet production lead time requirements.

In addition, delays in developing an acquisition strategy for the 120-mm. mortar system and potential production problems with the 155-mm. chemical projectiles have been encountered.

NAVY AMMUNITION PROGRAM

The Navy's $954.3 million request for ammunition is, in our opinion, overstated by $139.4 million for the following reasons:

--$24.2 million is for two items for which program quantities provide excess inventory.

--$5.7 million is for two items with overstated unit costs.

--$57.9 million is premature for the Gator weapon and two machine gun ammunition items because of technical or other problems.

--$12.8 million is for two items that do not require funds in fiscal year 1986 to meet delivery schedules.

--$17.3 million for 76-mm. ammunition can be provided from leftover funding and components from prior year programs.

--$21.5 million is for Bigeye bombs that are experiencing technical problems.

In addition, there are unresolved issues with the 5-inch semiactive laser-guided projectile, the MK83 general purpose bomb, and the 5-inch 54-caliber high fragmentation projectile.

MARINE CORPS AMMUNITION PROGRAM

The Marine Corps' $488.9 million request is, in our opinion, overstated by $75.5 million for the following reasons:

--$13.8 million is for four items that do not require funds in fiscal year 1986 to meet delivery schedules.

--$61.3 million is for three items for which funds are not needed until fiscal year 1987 to meet production lead time requirements.

--$400,000 of the request for 105-mm. training cartridges is based on overstated unit costs.

AIR FORCE AMMUNITION PROGRAM

The Air Force's $1.5 billion modified request for ammunition is, in our opinion, overstated by $297 million for the following reasons:

--$244.6 million of the $644.4 million requested for four items is for program quantities that do not require funds in fiscal year 1986 to meet delivery schedules.

--$13.4 million of the $94.5 million requested for Durandal bombs is based on overstated unit cost estimates.

--The $8.4 million for FMU-130 fuzes is unnecessary because the fuze is being replaced and other fuzes are available in the Air Force's inventory to meet interim needs.

--$3 million of the $100.4 million request for 30-mm. cartridges is for a container repair component that the Air Force does not plan to buy.

--$2.2 million of the $13.9 million request for the improved 2,000-pound bomb is for fees which will not be incurred and reserves which are excessive.

--$2 million is for the timer, actuator, fin, and fuze program which is not ready for production in fiscal year 1986.

--$1.3 million of the $3.9 million request for rapid munitions assemblies is for engineering change orders and proposals which exceed Air Force guidance.

--$22.1 million is for Bigeye bombs that are experiencing technical problems.

ARMY'S AMMUNITION PRODUCTION BASE PROGRAM

The Army's $368.4 million request for its ammunition production base program is, in our opinion, overstated by $129.2 million for the following reasons:

--$31.15 million is premature for an RDX/HMX project at the Holston Army Ammunition Plant, Tennessee, because the design is incomplete.

--$93.78 million is premature for three binary munitions-related projects because designs are incomplete, the site has not been selected for one project, and technical problems involving the Bigeye bomb should be resolved before funding any of the projects.

--$4.3 million is not needed for demonstrating that the planned binary munitions production facilities can operate as designed because, as discussed above, the facilities are still being designed.

RECOMMENDATIONS TO THE COMMITTEES

We recommend the House and Senate Committees on Appropriations make the following reductions to the Department of Defense's fiscal year 1986 appropriation request for ammunition:

--$580.2 million for 34 items in the Army's request.

--$139.4 million for 11 items in the Navy's request.

--$75.5 million for 8 items in the Marine Corps' request.

--$297 million for 11 items in the Air Force's request.

These recommended reductions are delineated by budget line number in appendixes VIII, IX, X, and XI.

We also recommend the Committees delete $129.2 million from the Army's ammunition production base program request as shown in appendix XII.

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We are sending copies of the report to the Secretaries of Defense, the Army, the Navy, and the Air Force; the Commandant of the Marine Corps; and other interested parties in the ammunition community.

Frank C. Conahan
Director

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ABBREVIATIONS

AAO	Army acquisition objective
AAP	Army Ammunition Plant
ADAM	area denial artillery munitions
API	armor piercing incendiary
APIT	armor piercing incendiary tracer
CRDC	U.S. Army Chemical Research and Development Center
DC	methylphosphonic dichloride
DF	methylphosphonic difluoride
DOD	Department of Defense
DT&E	developmental testing and evaluation
ECCM	electronic counter-countermeasure
GEMSS	ground-emplaced mine scattering system
HE	high explosive
HEDP	high explosive dual purpose
HEI	high explosive incendiary
HEI-T	high explosive incendiary-tracer
ICM	improved conventional munitions
IOT&E	initial operational test and evaluation
LAP	load, assemble, and pack
MICLIC	mine clearing line charge
OSD	Office of the Secretary of Defense
OT&E	operational test and evaluation

RAAMS	remote antiarmor mines system
SALGP	semiactive laser-guided projectile
TAFF	timer, actuator, fin, and fuze
TP	target practice
VTNF	variable time nonfragmentation

INTRODUCTION

The military services' fiscal year 1986 appropriation request for ammunition was about $5.7 billion, including the Army's request for production base support of $368.4 million, as summarized in table 1.1.

Table 1.1

Military Services' FY 1986 Ammunition Appropriation Request

Appropriations	Amount (millions)
Procurement of Ammunition, Army:	
Atomic materiel	$ 5.2
Conventional ammunition	2,170.8
Miscellaneous items	90.6
Production base support	368.4
Total	2,635.0
Other Procurement, Navy:	
Air-launched ordnance	620.8
Ship gun ammunition	254.6
Other expendable ordnance	77.5
Sonobuoys	1.4
Total	954.3
Procurement, Marine Corps:	
Conventional ammunition	488.9
Other Procurement, Air Force:	
Rockets and launchers	30.6
Cartridges	196.2
Bombs	1,237.8
Targets	8.7
Fuzes	70.3
Other items	60.9
Total	1,604.5
Total all services	$5,682.7

Table 1.2 summarizes the Army's request for production base support.

Table 1.2

Army's FY 1986 Production Base Support Request

	Amount (millions)
Provision of industrial facilities	$280.6[a]
Components for proveout	14.0
Layaway of industrial facilities	22.5
Jefferson Proving Ground modernization	2.0
Chemical demilitarization	49.3
Total	$368.4

[a]Includes $241.9 million for 16 projects to modernize and expand the ammunition production base and $38.7 million for production support and equipment replacement.

The services justified their ammunition requests on the basis of meeting training needs and building the war reserve stockpile. The Army's production base support funds are for enhancing ammunition production capacity by modernizing existing facilities, building new ones, and protecting and preserving facilities no longer required for active production.

OBJECTIVES, SCOPE, AND METHODOLOGY

The Chairmen, Subcommittees on Defense, House and Senate Committees on Appropriations, asked us to assess the justification for the fiscal year 1986 ammunition and the Army's production base support programs.

We evaluated the appropriation requests involving large dollar amounts, items being bought for the first time, items that are having production and/or performance problems, and projects to enhance the ammunition production base. We reviewed factors such as requirements, inventory positions, production problems, quality, testing and development, funded program status, and field malfunctions for most items to identify those with potential problems.

We analyzed production schedules and procurement lead times to determine whether the programs could be executed efficiently and economically. We assessed projected receipt and loss data to ensure that inventory would not greatly exceed inventory objectives. We also determined whether programs for related ammunition end items (e.g., propelling charges, projectiles, and fuzes) were in reasonable balance with the programs they supported. We did not have time to verify the accuracy of all data we reviewed, such as inventory positions, training losses, and cost estimates, but did determine the reasonableness of data by contrasting it with data from prior years.

To evaluate the justifications for specific ammunition items and projects, we interviewed officials involved in ammunition management and procurement and obtained documents, such as briefings, status reports, production problem meeting minutes, and budget support data, from the services at the following locations:

--Headquarters, Department of the Army, Washington, D.C.;

--U.S. Army Armament, Munitions and Chemical Command, Rock Island, Illinois;

--U.S. Army Research and Development Center, Dover, New Jersey;

--U.S. Army Chemical Research and Development Center, Aberdeen Proving Ground, Maryland;

--U.S. Army Munitions Production Base Modernization Agency, Dover, New Jersey;

--Project Manager, Sergeant York Program Office, Dover, New Jersey;

--Project Manager, Tank Main Armament Systems, Dover, New Jersey;

--Project Manager, Cannon Artillery Weapons Systems, Dover, New Jersey;

--Headquarters, Department of the Navy, Washington, D.C.;

--Naval Air Systems Command, Washington, D.C.;

--Naval Sea Systems Command, Washington, D.C.;

--Ships Parts Control Center, Mechanicsburg, Pennsylvania;

--Headquarters, Department of the Air Force, Washington, D.C.;

--U.S. Air Force Systems Command, Armament Division, Eglin Air Force Base, Florida; and

--Ogden Air Logistics Center, Hill Air Force Base, Utah.

As directed, we did not obtain agency comments on matters in this report, but we did discuss a draft with program officials of the Army's Office of the Deputy Chief of Staff for Research, Development, and Acquisition; the Navy's Office of the Deputy Chief of Naval Operations for Logistics; and the Air Force's Office of the Deputy Chief of Staff for Logistics and Engineering. We made changes to the report, where appropriate, to reflect the views of these program officials.

Our review was performed from October 1984 to June 1985 in accordance with generally accepted government auditing standards.

ARMY AMMUNITION PROGRAM

The Army's fiscal year 1986 request for ammunition, excluding the request for ammunition production base support, was about $2.27 billion. We reviewed the Army's justification for 78 items, representing about 86 percent of the ammunition request, and believe that $580.2 million is not needed in fiscal year 1986 for the following reasons:

--$198.2 million involves 12 items for which the inventory would exceed requirements.

--$97.6 million for propelling charges and fuzes would buy more of these items than are needed considering the number of projectiles that use them.

--$33.6 million is for four items for which unit cost estimates are overstated.

--$49 million involves three items for which the programmed procurements are premature.

--$88.1 million involves eight items for which total program quantities cannot be delivered on schedule.

--$113.7 million is for three items for which procurement lead times are too long.

In addition, delays in developing an acquisition strategy for the 120-mm. mortar system and potential production problems with 155-mm. chemical projectiles have been encountered.

INVENTORY WILL EXCEED INVENTORY OBJECTIVES

At least $198.2 million of the funds requested for 12 items is not needed because, in our opinion, program quantities will either cause inventories to exceed objectives or add to already excess inventory positions at the end of the fiscal year 1986 funded delivery period, as shown in table 2.1. An asterisk (*) after dates in tables in this section indicates the date the funded delivery period ends.

Table 2.1

Item	Recommended reductions Quantity	Dollars
		(millions)
Cartridges:		
.22 caliber ball, long rifle	55,540,000	$ 1.1
9-mm. ball	8,312,000	1.4
.45 caliber ball, match	4,623,000	0.7
.50 caliber blank, M1A1, linked	19,582,000	15.0
.50 caliber tracer, M17, linked	2,882,000	4.1
20-mm. target practice, tracer	2,994,000	11.4
30-mm. HEDP M789	881,000	26.0
4.2-in. illuminating	143,000	27.3
105-mm. M456A2, HEAT	130,000	47.2
105-mm. M490A1, TP-T	243,000	36.6
Smoke Pot, HC, M5	130,000	18.6
Simulator, M115A2	1,049,800	8.8
Total		$198.2

.22 caliber ball, long rifle cartridge

About $1.1 million of the Army's request of $2.7 million for 136,179,000 .22 caliber ball, long rifle cartridges is unnecessary. Funding the full request would cause an excess inventory, as shown in table 2.2.

Table 2.2

	Quantity
	(thousands)
Inventory at September 30, 1984	154,862
Due in from prior funded programs	20,000
Fiscal year 1986 request	136,179
Total	311,041
Less: Estimated losses through May 31, 1987*	232,518
Projected inventory at May 31, 1987*	78,523
Less: Inventory objective	22,983
Excess	55,540

Therefore, a program reduction of 55.5 million cartridges at an estimated cost of $1.1 million is warranted. Since this item is procured commercially, reducing the program will not affect the production base.

Army representatives agreed with the reduction.

9-mm. ball cartridges

The Army's fiscal year 1986 request of $1.4 million for 8,312,000 9-mm. ball cartridges is unnecessary. Completion of undelivered prior year programs will create an inventory that exceeds the Army aquisition objective (AAO), as shown in table 2.3.

Table 2.3

	Quantity (thousands)
Inventory at September 30, 1984	-
Due in from prior year programs	14,590
Total	14,590
Less: Estimated losses through March 31, 1987*	3,627
Projected inventory at March 31, 1987*	10,963
Less: Inventory objective	10,253
Excess	710

Therefore, even without the proposed fiscal year 1986 program, the inventory would exceed the AAO at the end of the funded delivery period. Since this item is procured commercially, reducing the program will not affect the production base.

Army representatives believe the fiscal year 1986 program quantity is needed to support fielding of the new 9-mm. gun. However, first deliveries of the 9-mm. gun are not scheduled to occur until October 1985, with 26,500 to be fielded to Army units through March 1987. Since the Army's current training consumption forecasts are that 90 to 100 cartridges are needed per gun each year, the undelivered quantity due in from prior years is more than enough to support training through the fiscal year 1986 funded delivery period.

.45-caliber ball, match cartridges

Only a small portion of the Army's fiscal year 1986 request of $0.8 million for 5,120,000 .45-caliber cartridges is justified. Funding the entire request will result in an excess inventory position, as shown in table 2.4.

Table 2.4

	Quantity (thousands)
Inventory at September 30, 1984	1,220
Due in from prior year programs	3,877
Fiscal year 1986 request	5,120
Total	10,217
Less: Estimated losses through May 31, 1987*	4,777
Projected inventory at May 31, 1987*	5,440
Less: Inventory objective	817
Excess	4,623

A program reduction of 4,623,000 cartridges at an estimated cost of $0.7 million is warranted. Because this item is procured commercially, this reduction would not affect the production base.

Army representatives agreed with the reduction.

.50-caliber cartridges

The Army's $76.9 million request for .50-caliber cartridges includes $15 million for 19,582,000 blank cartridges and $4.1 million for 2,882,000 tracer cartridges. These requests are not justified because quantities on hand and due in would meet the Army's estimate of its needs through the end of the fiscal year 1986 funded delivery period, as summarized in table 2.5.

Table 2.5

	Quantities	
	Blank	Tracer
	(thousands)	
Inventory at September 30, 1984	8,413	2,036
Due in from prior year programs	41,925	2,108
Total	50,338	4,144
Less: Estimated losses through June 30, 1987*	31,029	2,027
Projected inventory at June 30, 1987*	19,309	2,117
Less: Inventory objective	8,159	331
Excess	11,150	1,786

Deleting the programs should not adversely affect production since the quantity of the other .50-caliber items is enough to maintain production at the Lake City Army Ammunition Plant (AAP) above the minimum sustaining rate of 1 million cartridges a month.

Army representatives agreed that the blank and tracer programs should be deleted.

20-mm. target practice tracer cartridges, linked

The $19.3 million request for 5,175,000 20-mm. cartridges should be reduced by $11.4 million because the full program quantity would result in an excess inventory position, as shown in table 2.6.

Table 2.6

	Quantity (thousands)
Inventory at September 30, 1984	2,723
Due in from prior year programs	5,406
Fiscal year 1986 program	5,175
Total	13,304
Less: Estimated losses through July 31, 1987*	8,079
Projected inventory at July 31, 1987*	5,225
Less: Inventory objective	2,231
Excess	2,994

Army representatives agreed that the program should be reduced by $11.4 million for 2,994,000 cartridges but said that the Army would like to use the funds for procuring other ammunition items.

30-mm. high explosive dual purpose (HEDP) cartridges

The entire fiscal year 1986 request of $26 million for 881,000 30-mm. M789 cartridges could be eliminated because the quantity funded from fiscal years 1982 through 1985 is sufficient to meet the AAO.

The projected cartridge inventory after completion of the fiscal year 1985 program would be 4 million cartridges, while the AAO is about 3.7 million cartridges. This is a combat round with no training or other consumption projected during the fiscal year 1986 funded delivery period. Therefore, inventory would exceed objectives even without a fiscal year 1986 program.

In responding to congressional questions regarding the fiscal year 1986 program, the Army in April 1985 stated that funds provided from fiscal year 1982 through 1985 were sufficient to meet the AAO of about 3.7 million cartridges. However, in commenting on our draft report in June 1985, Army representatives stated a fiscal year 1986 program of 179,000 cartridges costing $5.3 million was necessary. We found that adequate funding had been provided in the fiscal year 1985 budget to meet the inventory objective and therefore believe there is no need for the fiscal year 1986 program.

4.2-inch, illuminating cartridges

This $27.3 million request for 143,000 4.2-inch illuminating cartridges is not needed because quantities already on hand and due in exceed the AAO. The data in table 2.7, provided by the Army, shows that the projected inventory position at the end of the fiscal year 1986 funded delivery period will exceed the AAO without a fiscal year 1986 program and, therefore, a fiscal year 1986 program is not needed.

Table 2.7

	Quantity
Inventory at September 30, 1984	581,500
Due in from prior year programs	232,000
Total	813,500
Less: Estimated losses through September 30, 1987*	308,000
Projected inventory at September 30, 1987*	505,500
Less: Inventory objective	167,000
Excess	338,500

Army representatives agreed with the reduction.

105-mm. high explosive antitank cartridge

This $47.2 million request for 130,000 105-mm. M456A2 cartridges is unnecessary because quantities already on hand and due in are sufficient to meet the Army's needs. Specifically, the Army would have an excess of 60,200 cartridges even without a fiscal year 1986 program, as shown in table 2.8.

Table 2.8

	Quantity
Inventory at September 30, 1984	380,200
Due in from prior year programs	257,000
Total	637,200
Less: Estimated losses through September 30, 1987*	16,000
Projected inventory at September 30, 1987*	621,200
Less: Inventory objective	561,000
Excess	60,200

The inventory includes 254,200 older M456A1 model cartridges that the Army plans to phase out through foreign military sales, but until such sales are made, they are to be applied against the AAO. The quantity due in includes 247,200 undelivered cartridges from fiscal year 1985 and prior programs and 9,800 cartridges as payback from foreign military sales.

Army representatives agreed with our analysis. However, they said the fiscal year 1986 program should be retained because the AAO will increase for the M456A2. However, we found that according to Army requirements data the AAO is projected to increase by only 24,000 cartridges, which would still leave an excess of 36,200 cartridges.

105-mm. target practice cartridges

The Army requested $51.2 million for 347,000 105-mm. M490A1 target practice (TP) cartridges used in tank cannons for training. The request should be reduced by $36.6 million for 243,000 cartridges because completion of the full program would result in significant excess inventory and unit costs are overstated.

If the full program were produced, an inventory excess would result, as illustrated in table 2.9.

Table 2.9

	Quantity
Inventory at September 30, 1984	222,000
Due in from prior year programs	784,000
Fiscal year 1986 request	347,000
Total	1,353,000
Less: Estimated losses through September 30, 1987*	912,000
Projected inventory at September 30, 1987*	441,000
Less: Inventory objective	198,000
Excess	243,000

The 784,000 cartridges due in represent about 737,000 undelivered M490 and M490A1 cartridges from the fiscal years 1984 and 1985 programs plus 47,000 cartridges scheduled to be produced by converting M456 cartridges. In response to congressional questions, the Army stated that the fiscal year 1986 program was based on a need to offset restrictions against the use of the M724 at tank training ranges in Europe. Because accelerated range rework has negated this need, the Army may decrease the M490A1 program.

Also, the $147.55 cartridge cost used in the budget request is overstated. This unit cost figure incorporates $43.28 as the estimated cost for projectile metal parts. However, in April 1985, Army procuring activity officials developed a revised cost estimate of $36.28 for projectile metal parts, based on recent contract costs escalated to fiscal year 1986. Therefore, a reduced unit cost of $140.55 per cartridge should be used for cartridges which are funded.

Army representatives said that a reduction of only 203,000 cartridges at a cost of $31 million was acceptable given the decrease in training requirements. However, using the Army's most recent training requirements, we determined a quantity reduction of 243,000 cartridges was appropriate, leaving a fiscal year program of 104,000 cartridges at a cost of $14.6 million (based on a unit cost of $140.55).

Smoke pots

The Army's fiscal year 1986 request includes $20.8 million for 143,000 smoke pots--which are used to produce smoke for smoke screens--as shown in table 2.10.

Table 2.10

Model	Quantity	Cost (millions)
Floating M4A2	13,000	$ 2.2
Ground M5	130,000	18.6
Total	143,000	$20.8

The entire M5 request is not needed because quantities on hand and due in are more than enough to meet the Army's needs. In fact, the projected inventory position exceeds the inventory objective at the end of the funded delivery period, without a fiscal year 1986 program, as shown in table 2.11.

Table 2.11

	Quantity
Inventory at September 30, 1984	73,000
Due in from prior year programs	203,000
Total	276,000
Less: Estimated losses through September 30, 1987*	202,000
Projected inventory at September 30, 1987*	74,000
Less: Inventory objective	34,000
Excess	40,000

Army representatives agreed the program should be reduced by 107,000 smoke pots, or $15.3 million, but said the Army would like to use the $15.3 million for M4A2 smoke pot production. They said that if this was not done, 74 people at Pine Bluff Arsenal would be laid off. However, as discussed below, because of a backlog and difficulty with obtaining sufficient components, the M4A2 program should not be increased.

In April 1985, 295,700 M4A2 and M5 smoke pots were yet to be produced from prior year programs. These items are produced alternately on the same production line at the Pine Bluff Arsenal. The Army has had a long-standing problem with getting sufficient components to support operations at the Pine Bluff

Arsenal. The undelivered quantity would support 1-8-5[1] production of 12,000 smoke pots a month for about 25 months, or through April 1987. However, component producers have not yet been able to deliver 12,000 a month. Component deliveries through April 1985 in support of the fiscal year 1984 program averaged less than 10,000 components a month. Therefore, it may be inappropriate to use the 12,000-a-month 1-8-5 rate as a basis for production capacity. Using the 10,000-a-month rate, the undelivered quantities would be produced over nearly 30 months, or through September 1987, the end of the fiscal year 1986 funded delivery period. As a result, no fiscal year 1986 M4A2 and M5 program quantities could be delivered within the funded delivery period.

We believe the entire fiscal year 1986 M5 program is not needed because of excessive inventory posture. By not producing the M5, additional capacity would be available for producing the production backlog and the fiscal year 1986 M4A2 program. However, because of the backlog and the difficulty with obtaining sufficient components, the M4A2 program should not be increased since it may not be possible to increase the quantity produced within the funded delivery period.

Simulator, projectile ground burst

About $8.8 million of the Army's $15.1 million request for 1,809,000 M115A2 projectile ground burst simulators is not needed because the program quantity would result in an inventory at the end of the funded delivery period which greatly exceeds the Army's inventory objective.

On the basis of the Army's receipt, loss, and inventory data, the quantity requested will result in an excess inventory position of 1,049,800 simulators at the end of the fiscal year 1986 funded delivery period, as shown in table 2.12.

[1]One 8-hour shift, 5 days a week.

Table 2.12

	Quantity
Inventory at September 30, 1984	363,800
Due in from prior year programs	2,024,000
Fiscal year 1986 request	1,809,000
Total	4,196,800
Less: Estimated losses through September 30, 1987*	2,643,000
Projected inventory at September 30, 1987*	1,553,800
Less: Inventory objective	504,000
Excess	1,049,800

A program quantity reduction of 1,049,800 cartridges would not adversely affect production since the M115A2 shares production facilities with the M116, which is scheduled to be produced over 3 months of the funded delivery period. Reducing the Army's M115A2 program would allow production of the remaining 759,200 M115A2's, along with the Air Force and Navy quantities, within the funded delivery period at about the 1-8-5 rate. Therefore, a program reduction of 1,049,800 simulators, at an estimated cost of $8.8 million, appears to be warranted.

Army representatives agreed with the reduction.

IMBALANCES BETWEEN PROPELLING CHARGES, FUZES, AND PROJECTILES

In developing its propelling charge and fuze programs, the Army tries to balance the propelling charge and fuze inventories with the inventories of the projectiles that use the charges and fuzes. The Army tries to maintain this balance as of the end of each fiscal year's funded delivery period. However, the fact that the funded delivery periods for projectiles may end as much as 10 months later than charge and fuze delivery periods is not recognized in computing the inventory balance.

Our review indicates that at least $97.6 million of the $185.3 million requested for four of five types of propelling charges and one of two types of fuzes is not needed because the quantities requested, if procured, would result in an imbalance between the inventory of the propelling charges or fuzes and the projectiles that use them.

155-mm. and 8-inch propelling charges

The Army is requesting a total of $125.5 million for 155-mm. and 8-inch propelling charges, as summarized in table 2.13.

Table 2.13

Type	Model	Quantity	Dollars
155-mm.	M3A1	466,000	$ 27.7
155-mm.	M4A2	378,000	30.4
155-mm.	M203A1	60,000	20.4
155-mm.	M119A2	140,000	17.8
8-inch	M188A1	129,000	29.2
		1,173,000	$125.5

The M119A2 and M188A1 programs do not need to be funded in fiscal year 1986 because the Army will be in an excess inventory position even without a fiscal year 1986 program. A reduction is warranted for the M3A1 program because of an excess inventory position after the fiscal year 1986 program. None of the M4A2 program is needed because of an excess inventory position after completion of the fiscal year 1987 program even without a fiscal year 1986 program. Since the Army also plans to extend delivery of the fiscal year 1985 program through the fiscal year 1986 funded delivery period, production of these four programs is questionable in any case. The excess amounts are shown in table 2.14.

Table 2.14

Item	Excess program	
	Quantity	Cost
		(millions)
Propelling charges:		
155-mm. M3A1 green bag	56,000	$ 3.3
155-mm. M4A2 white bag	378,000	30.4
155-mm. M119A2 white bag	140,000	17.8
8-inch M188A1 white bag	129,000	29.2
Total		$80.7

The fiscal year 1985 propelling charge program is much larger than both the fiscal year 1984 and 1986 programs. Consequently, the Army planned to hire 300 additional workers and use multiple work shifts at the Indiana AAP to complete the fiscal year 1985 program on schedule. However, sharp decreases from the fiscal year 1985 program to the fiscal year 1986 program would cause all 300 added workers to be laid off. Thus, the Army has approved and issued a waiver allowing production of the fiscal year 1985 programs for M119A2, M188A1, M4A2, and M3A1 propelling charges over a 2-year period.

Army officials told us that production of the fiscal year 1985 M119A2 and M188A1 programs would be extended through the fiscal year 1986 funded delivery period at a 1-8-5 production level. This action, in effect, deletes the need for funding the M119A2 and M188A1 in fiscal year 1986.

The DOD-wide fiscal years 1985 and 1986 M4A2 programs total 1,604,000 propelling charges. A procuring agency official told us that the realistic 1-8-5 production rate for the M4A2 was 50,000 per month, meaning 1,200,000 charges would sustain 1-8-5 production for 2 years. Therefore, the Army's fiscal year 1986 request for 378,000 M4A2 propelling charges could be deleted, and there would still be sufficient quantities to maintain production at the 1-8-5 level. Similarly, the DOD-wide fiscal years 1985 and 1986 M3A1 programs totaling 1,230,000 propelling charges could be reduced by 56,000 charges and still support production at the 1-8-5 level of 50,000 charges a month. This is because a program reduction of the entire fiscal year 1986 M4A2 program would leave 1,226,000 charges to produce, which is still 26,000 above the 1-8-5 level for a 2-year period. Propelling charge operations can be alternated quite easily so that the 26,000 M4A2 charges could be used to maintain 1-8-5 production on the M3A1 line.

We were concerned about the impact of fiscal year 1986 program reductions on readiness, in terms of balancing the propelling charge inventory with the inventories of projectiles which use them. Our analysis of Army data indicates the asset position shown in table 2.15 if the M3A1, M4A2, M119A2, and M188A1 programs are reduced as discussed above.

Table 2.15

Type	Model	Projected inventory	Inventory objective	Excess or deficit (-)
		(thousands)		
155-mm.	M3A1	2,367	2,326	41
155-mm.	M4A2	6,134	6,387	-253
155-mm.	M119A2	4,860	4,517	343
8-inch	M188A1	958	870	88

The entire fiscal year 1986 requests for the M119A2 and the M188A1 propelling charges and part of the request for M3A1 charges could be eliminated, and excess inventories would still occur at the end of the funded delivery period.

Without the fiscal year 1986 program for the M4A2 charge, the Army would have an inventory deficit of 253,000 charges after the fiscal year 1986 funded delivery period. The actual deficit would be less, however, because projectiles have longer lead times. Deliveries of the fiscal year 1986 projectile programs are not scheduled to be completed until up to 10 months after the corresponding M4A2 program is to be completed. Also, according to Army records, requirements for the M4A2 are expected to decrease sharply, and even if the fiscal year 1986 M4A2 program is eliminated, the M4A2 inventory would exceed requirements by more than 1.2 million charges at the end of fiscal year 1987 funded delivery period. The Army currently anticipates no further buys of the M4A2 through fiscal year 1990.

In summary, on the basis of the substantial size of the fiscal year 1985 programs and the relatively sound inventory positions of propelling charges, the fiscal year 1986 request should be reduced by $80.7 million.

Army representatives agreed that the requests for the M3A1, M4A2, and M188A1 propelling charges totaling $62.9 million should be deleted. However, they said that the $17.8 million for M119A2 propelling charges was needed to eliminate the need for a fiscal year 1987 program increase to reach a balanced posture during the fiscal year 1987 funded delivery period. However, we believe since there are no planned Army fiscal year 1987 programs for the M4A2 and M188A1 propelling charges, a substantial fiscal year 1987 M119A2 program may be needed to

help maintain a stable work force. In addition, M119A2 propelling charges would be procured when needed, rather than 1 year earlier.

Mechanical time superquick fuzes

The Army's fiscal year 1986 ammunition request includes $59.8 million for 912,000 mechanical time superquick fuzes, as shown in table 2.16.

Table 2.16

Model	Quantity	Cost (millions)
M582A1	154,000	$10.5
M577A1	758,000	49.3
	912,000	$59.8

The Army projects an excess inventory for the M582A1 and older similar fuzes in future years. However, because of restrictions placed on most older model fuzes used for training, the request for the M582A1 fuze is to meet training requirements.

Completion of the M577A1 program would leave the fuze inventory below stated requirements at the September 1987 end of the funded delivery period, as shown in table 2.17.

Table 2.17

	Quantity (thousands)
Inventory at September 30, 1984 (M577A1 and older models)	5,151
Due in from prior year programs	1,747
Fiscal year 1986 request	758
Total	7,656
Less: Estimated losses through September 30, 1987	459
Projected inventory at September 30, 1987	7,197
Less: Inventory objective	7,256
Deficit	59

Although a deficit is indicated by the above, reductions in the M577A1 program are warranted if the reductions discussed earlier in this report are made to the fiscal year 1986 requests for several different types of projectiles that use the M577A1 fuze. The reductions are also warranted because the Army plans to replace the M577A1 with a new electronic time fuze beginning with the fiscal year 1988 program--buying fewer M577A1 fuzes now would allow increased future procurement of the improved fuze.

Reducing the 155-mm. projectile programs by about 304,000 projectiles would decrease the M577A1 fuze requirements by about 319,000 because the fuze requirement is based on a factor of 105 percent of the projectile inventory. Therefore, the new fuze requirement would be 6,937,000. As a result, the fiscal year 1986 program should be reduced by 260,000 fuzes costing about $16.9 million. Additionally, the two current fuze producers have had difficulty meeting their delivery schedules, which are significantly lower than the delivery rates scheduled for the fiscal year 1986 program. A program reduction could reduce monthly production by nearly 30,000 a month and allow producers to operate at a rate closer to 1-8-5, because the M577A1 and M582A1 share production facilities and their combined programs are scheduled for a 9-month delivery period.

Army representatives agreed that the reduction could be made if the Committees reduce the 155-mm. projectile programs.

OVERSTATED UNIT COST ESTIMATES

Because unit cost estimates were overstated, $33.6 million of the total amount requested for the following four items is not needed:

--$13 million for 40-mm. high explosive dual-purpose cartridges;

--$1.4 million for 40-mm. TP cartridges;

--$14.7 million for 105-mm. discarding sabot, target practice tank cartridges; and

--$4.5 million for 105-mm. armor piercing, fin stabilized, discarding sabot tracer cartridges.

40-mm. HEDP cartridges

This $48.8 million request for 2,047,000 M430 cartridges should be reduced by $13 million because the unit cost is overstated by $6.35.

The request is based on a cartridge unit cost of $23.84. In response to Committee questions, the Army stated that the unit cost should be $17.49 and that the $23.84 unit cost had resulted from the wrong data base being used. Using the correct unit cost results in a $13 million reduction to the Army's request for 2,047,000 M430 cartridges.

Army representatives agreed that the unit cost used in the budget was overstated and as a result the program could be reduced by $13 million for the budgeted quantity. However, they said that the Army would like to use the $13 million to buy additional cartridges.

As discussed on pages 30 and 31, about 171,000 of the Army's fiscal year 1986 program would not be delivered within the funded delivery period and we believe the request should be reduced by this quantity, costing an additional $3 million. Therefore, we believe the funds should not be provided for additional quantities because it is unlikely that they could be produced within the funded delivery period.

40-mm. practice cartridges

The Army's $6 million request for 2.5 million 40-mm. practice cartridges should be reduced by $1.4 million because the cartridge unit cost is overstated by $0.56.

The budget request is based on a cartridge unit cost of $2.42, but the Army's latest estimate is $1.86, based on actual fiscal year 1985 contract data escalated to fiscal year 1986. Army representatives agreed that the unit cost was overstated. However, they want to use the $1.4 million to buy an additional 748,000 cartridges to preclude a potential inventory shortage in fiscal years 1987 to 1990.

However, we found the shortage is predicated on a planned increase in training consumption from about 1 million to about 4 million cartridges a year. If this increased consumption does not occur, a decrease, rather than an increase, in program quantity could be warranted to preclude the inventory from exceeding the Army's objectives.

105-mm. target practice cartridges

The $89.4 million requested for 433,000 105-mm. M724 discarding sabot, target practice cartridges could be reduced by $14.7 million because the unit cost is overstated.

The request is based on an estimated unit cost of $206.47 per cartridge, which included $119.38 for projectile metal parts. However, as of April 1985, the Army estimated, on the basis of the latest contract costs escalated to fiscal year 1986 levels, that projectile metal parts should cost $85.41. Therefore, the estimated cartridge unit cost should be decreased by $33.97 to $172.50 and the program request reduced to $74.7 million.

Army representatives agreed that the unit cost was overstated. However, they want to use the $14.7 million to buy an additional 85,000 cartridges. Army projections show that M724 inventory will be about 200,000 cartridges below the Army's inventory objective after completion of the fiscal year 1986 program; consequently, an increase may be warranted. This would require production at the 2-8-5 rate for one metal parts producer. Since the projected fiscal year 1987 program would increase by 61,000 cartridges, metal parts production would have to increase to a 2-8-5 basis for that program. We did not have time to evaluate the feasibility of increasing production to a 2-8-5 basis in fiscal year 1986.

105-mm. armor-piercing cartridges

The Army requested $46.8 million for 76,000 105-mm. M833 armor-piercing, fin stabilized, discarding sabot tracer (APFSDS-T) cartridges. The request could be reduced by $4.5 million because the unit cost is overstated by $59.35.

The budget request is based on a unit cost of $615.89, which includes $164.12 for projectile metal parts and $281.09 for the penetrator core. As of April 1985, however, the latest Army estimates for the fiscal year 1986 program were $144.81 for the projectile metal parts and $241.05 for penetrator cores. Therefore, the estimated cartridge cost should be decreased by $59.35 to $556.54 and the program request reduced to $42.3 million.

The performance of this cartridge has been a cause for concern. Sabot breakups have occurred when cartridges were test fired from new gun tubes in cold temperatures. As a result, metal parts production was halted during 1984 and an engineering change proposal to remedy the problem was implemented. By April 1985, both of the Army's commercial metal parts producers had passed first article tests on their initial production incorporating the engineering change proposal and both had resumed production. An Army representative reported that tests with the redesigned sabots had been positive and that cartridge production was expected to be resumed in May 1985. However, as a result of the sabot breakup problems, 35,000 cartridges previously produced will be refitted with redesigned obturators. If the refitted cartridges fail testing, the cartridges will be salvaged for parts. If this happens, 35,000 penetrator cores may become available as government-furnished material for fiscal year 1986 program production.

Army representatives agreed that unit costs were overstated. However, they want to use the $5.2 million to buy additional cartridges. Given the sabot breakup problems and the fact that the cartridge will not be procured after fiscal year 1986, we believe a quantity increase is not warranted.

PREMATURE PROCUREMENT

Our review indicates that $49 million requested for the following three items is premature because of technical problems and/or the programs provide more ammunition than needed to support weapons acquisitions. The items and questionable amounts are

--$6.7 million for 51,000 4.2-inch mortar M328A1 smoke cartridges,

--$31 million for 144,000 proximity fuzed M822 cartridges for the Sergeant York system, and

--$11.3 million for 144,000 target practice M813 cartridges for the Sergeant York system.

4.2-inch smoke cartridges

The Army's $6.7 million request for 51,000 M328A1 4.2-inch mortar smoke cartridges should be deferred because of unresolved technical problems. The Army has suspended this cartridge from use except for war emergency and declared it unsafe for future procurement.

The problems were caused by lead azide in the M48A3 fuze and the cartridge burster. Specifically, sealing problems in both the fuze and the burster assembly caused water to evaporate from the lead azide. As a result, solid lead azide accumulated between the fuze and burster assembly and set off the burster charge prematurely. Over a 3-year period, one person was killed, three were seriously injured, and two mortars and one armored personnel carrier were destroyed because of premature detonations of this cartridge.

Army officials told us that the Army planned to conduct a $1.6 million engineering study to modify the cartridge design. This study has not been funded, and it will take 21 to 24 months to complete once it is funded.

An additional 2 months are to be added to the initial procurement lead time to allow the metal parts producer to retool for the redesigned cartridge. In any event, even with this extended lead time, the redesign study will not be completed until the fiscal year 1986 funded delivery period is under way. We believe funding for this cartridge should be deferred until the redesign effort has been funded and firm dates for completing such efforts are determined.

Army representatives agreed with the reduction.

40-mm. ammunition for Sergeant York

The Army is requesting $42.3 million to buy 288,000 cartridges of 40-mm. ammunition for use in the Sergeant York Air Defense Gun System. The first Sergeant York battery is scheduled to be deployed in September 1986 and will replace the Vulcan Air Defense Gun System fielded in 1968. The Sergeant York is designed to provide significantly greater range, lethality, and armor protection than the Vulcan gun. It is mounted on an M48A5 tank chassis and uses a derivative of the F-16 aircraft radar and a twin 40-mm. BOFORS L70 gun.

The cartridge types, quantities, and estimated cost for the planned fiscal year 1986 buy are shown in table 2.18.

Table 2.18

Type of cartridge	Quantity	Estimated cost (millions)
Proximity fuzed cartridge (M822)	144,000	$31.0
Target practice cartridge (M813)	144,000	11.3
Total	288,000	$42.3

The Army's request to procure additional Sergeant York ammunition in fiscal year 1986 is premature. Funding has been previously provided to procure ammunition to meet the Army acquisition objective for the fire units under contract. Also, the Army believes the proximity fuzed cartridge has not met electronic counter-countermeasure (ECCM) contract specifications and will not accept deliveries of fiscal year 1984 quantities until corrective action is taken.

The Army has a contract with Ford Aerospace and Communications Corporation which includes 3 options to procure 263 of 614 Sergeant York fire units the Army ultimately plans to procure. Options one and two for 146 fire units have been exercised. Option three for the remaining 117 fire units was to be exercised by May 31, 1984. However, late delivery of fire units under contract, as well as congressional and Department of Defense concerns over whether the Sergeant York will meet its operational performance requirements, has caused delays in exercising this third option. The contractor has agreed to extend the deadline for exercising this option through September 30, 1985, without contract renegotiations.

The AAOs for Sergeant York proximity fuzed cartridges and point detonating fuzed cartridges are about 25,000 and 17,000, respectively, per deployed battery. Procurement of target practice cartridges is authorized based on training and testing requirements. The 146 fire units under contract will provide 39 fire units for training purposes. The remaining 107 will support 8 Sergeant York batteries of 13 units each (12 active and 1 maintenance float). Table 2.19 contrasts the ammunition authorized for eight batteries to the ammunition funded through fiscal year 1985 and shows that ammunition is excess to that required to support the fire units under contract.

Table 2.19

Cartridge type	Cartridges Funded	Required	Excess
Proximity fuzed	438,420	200,000	238,420
Point detonating	207,290	136,000	71,290
Target practice	381,290	245,000[a]	136,290

[a]Includes the requirement for both the 39 fire units for training, as well as the 8 batteries.

The Army's fiscal year 1986 request assumes the third option will be exercised to procure an additional 117 fire units. The 117 units translates into an additional 9 batteries for a total of 17 batteries requiring ammunition. Ammunition required for 17 batteries contrasted to the total funded through 1985, as well as that requested in fiscal year 1986, is given in table 2.20.

Table 2.20

Cartridge type	Cartridges Funded/requested	Required	Excess or shortfall (-)
Proximity fuzed	582,420	425,000	157,420
Point detonating	207,290	289,000	-81,710
Target practice	525,290	470,000	55,290

Table 2.20 shows that if the fiscal year 1986 quantities are procured, the AAO for proximity and target practice cartridges will be exceeded by 157,420 and 55,290, respectively. However, there would be 81,710 fewer point detonating cartridges than authorized for 17 batteries.

The Army believes the ECCM capability for the proximity fuzed cartridges delivered for its evaluation does not meet contract specifications and has notified Ford that fiscal year 1984 deliveries will not be accepted until the specifications are met. The Army estimates this will cause a 6-month delay in proximity fuzed cartridge deliveries when combined with slippage in completing production facilities. A Project Manager-Sergeant York budget analyst told us that the project office had proposed that the funds obtained in fiscal year 1985 be reprogrammed to procure high explosive point detonating cartridges since a contract for additional proximity fuzed cartridges was not planned until 1986. The analyst also said that approval for this proposal was not expected.

In commenting on our draft report, Project Manager-Sergeant York officials said the following:

--The proximity fuzed cartridges funded in fiscal year 1985 would not be procured.

--The AAO quantities for Sergeant York ammunition per battery were expected to increase.

--The delays associated with the ECCM deficiency and production start-up would permit elimination of the fiscal year 1985 buy without production interruptions.

The officials explained that the funds provided in fiscal year 1985 for proximity fuzed cartridges would be used for other purposes probably external to the Sergeant York program. According to the officials, the fiscal year 1985 quantities are no longer required because fiscal year 1984 funded quantities and the fiscal year 1986 requested quantities will provide production line continuity.

The Sergeant York officials provided preliminary data to show authorized ammunition quantities would increase to 29,200 and 21,500 per Sergeant battery for proximity fuzed and point detonating fuzed cartridges, respectively. This increase, if approved, combined with cancellation of the fiscal year 1985 buy, would result in a shortage of 57,980 proximity fuzed cartridges and 158,210 point detonating fuzed cartridges for 17 batteries, even if the fiscal year 1986 request is approved.

The 6-month delay we cited due to an ECCM fuze deficiency and production line start-up problem, according to project officials, will provide an opportunity to skip the fiscal year 1985 buy and schedule deliveries of fiscal year 1984 and 1986 quantities without a production line interruption. Further, the officials believe that if the fiscal year 1986 request is not funded, a costly production line interruption will occur.

We believe funding provided in fiscal year 1985 should remain in the program rather than being reprogrammed. If this is done, additional funding requested in fiscal year 1986 would not be needed unless the third option for additional fire units is exercised, the increased AAO quantities are approved, and an ECCM fix is demonstrated.

DELIVERIES NOT WITHIN FUNDED DELIVERY PERIOD

According to Army budget guidance, ammunition program quantities in a fiscal year budget request should be delivered within the fiscal year funded delivery period, lead times considered. Quantities not deliverable within the funded delivery period should be programmed for a later fiscal year.

Our review disclosed that $88.1 million of the Army's request for eight items is not needed in fiscal year 1986 because, in our opinion, the total quantities requested will not be delivered within the fiscal year 1986 funded delivery period. The items and questionable amounts are

--$18.9 million for 648,000 25-mm. high explosive incendiary-tracer (HEI-T) M792 cartridges;

--$3 million for 171,000 40-mm. high explosive dual-purpose M430 cartridges,

--$6.3 million for 14,520 155-mm. white phosphorous M825 smoke projectiles;

--$12.3 million for 1,018 M58A3 mine clearing line charges (MICLIC), $1.2 million for 103 M68A2 inert charges, and $5.4 million for 1,412 5-inch rocket motors used with the MICLIC; and

--$26.5 million for 134,000 ground-emplaced mine scattering system (GEMSS) antitank mines and $14.5 million for 36,000 GEMSS antipersonnel mines.

25-mm. high explosive incendiary-tracer cartridge

The Army is requesting $18.9 million for 648,000 25-mm. M792 cartridges, while the Marine Corps has requested $6.1 million for 184,000 M792 cartridges. The fiscal year 1986 program for both services is not needed because, in our opinion, none of the program quantity can be delivered within the funded delivery period.

The M792 is procured commercially from three contractors. Since the reorder procurement lead time is 12 months, the funded delivery period for the fiscal year 1986 program should end on September 30, 1987. However, under recently awarded contracts (Feb. 1985), the three commercial producers will not complete delivery of the fiscal year 1985 program quantity until August and September 1987, essentially the end of the fiscal year 1986 funded delivery period.

Cartridge production has been delayed by inconsistent performance of the M758 fuze used in the cartridge. Problems have included failure of the fuze to arm within the required distance after firing and failure of the self-destruct feature. As of May 1985, 1 of 2 fuze producers (the primary producer) still had 1 million fuzes to produce for the fiscal year 1984 program, with deliveries scheduled through January 1986. Production was shut down at the other fuze producer, pending decisions on acceptance of two fuze lots.

Army procurement activity officials said that the fiscal year 1986 program was necessary to support readiness and that when the fuze problem was resolved, action would be taken to accelerate fiscal year 1985 deliveries and complete the fiscal year 1986 program on schedule. We believe it is questionable whether sufficient fuzes can be produced to support delivery of the fiscal year 1986 program on time. As currently scheduled, the primary fuze producer would begin delivering fuzes for the fiscal year 1986 program 6 months into the funded delivery period. However, to fulfill this schedule, the primary producer would have to produce 120,000 fuzes a month and the other fuze producer would have to reach and sustain a rate of 40,000 fuzes a month.

Neither producer has demonstrated the ability to reach such production levels. Further, the tentative fiscal year 1987 program would not sustain such levels. Therefore, even if production could be accelerated to get the program on schedule a sharp cutback would be required for the tentative fiscal year 1987 program. We believe the Army's original plan for orderly delivery of the fiscal year 1985 program through the fiscal year 1986 funded delivery period is the prudent approach, eliminating the need for a fiscal year 1986 program.

40-mm. high explosive dual purpose cartridge

The 40-mm. M430 cartridge is being requested by all four services in fiscal year 1986, as shown in table 2.21.

Table 2.21

	Quantity	Cost (millions)
Army	2,047,000	$48.8
Air Force	967,000	16.3
Marines	880,000	15.3
Navy	49,000	0.9
Total	3,943,000	$81.3

The M430 has a 12-month reorder lead time, meaning the funded delivery period for the fiscal year 1986 program ends September 30, 1987. However, 329,000 cartridges are scheduled to be delivered 1 month late, in October 1987. While Army representatives contend that these cartridges may be produced within the funded delivery period, we note that there is a large

production backlog from prior years, that few cartridges have been produced because of a fuze problem, and that additional fuze producers must be obtained to sustain production levels needed to work off the backlog.

We do not believe the 329,000 cartridges can be produced during the funded delivery period; therefore, about $5.7 million for 329,000 cartridges is not needed. Allocating this reduction among the four services in proportion to their requested programs results in about a $3 million reduction to the Army's request, as shown in table 2.22.

Table 2.22

	Quantity	Cost
Army	171,080	$2,992,000
Air Force	82,250	1,384,000
Marines	72,380	1,260,000
Navy	3,290	57,000
Total	329,000	$5,693,000

In addition to the funded delivery period problem, as discussed earlier, the cartridge unit cost used as the basis for the Army's request was overstated by $6.35, and as a result, the Army's $48.8 million request includes an additional $13 million which is not needed. (See p. 22.)

155-mm. white phosphorus smoke projectiles

The Army is requesting $16.3 million for 38,000 M825 smoke projectiles, and the Marine Corps is requesting $9.3 million for 20,000 projectiles. Of the 58,000 total projectiles, 22,000 are not to be delivered within the funded delivery period.

Production of the M825 is currently behind schedule. Production of the initial fiscal year 1983 program began in January 1985, 1 month after the funded delivery period should have ended. Deliveries have been late because of delays with initial production start-up, while leakage problems with the white phosphorus canister have slowed canister production. Production of the fiscal year 1986 program for both the Army and Marine Corps is scheduled from May through December 1987 at about the 1-8-5 rate of 7,000 to 8,000 projectiles a month. The

M825 has a 12-month procurement reorder lead time, so the fiscal year 1986 funded delivery period should end September 30, 1987. However, 22,000 projectiles in the fiscal year 1986 program are scheduled for delivery after September 1987.

Allocating the 22,000-projectile reduction to the 2 services in proportion to their fiscal year 1986 requests results in a reduction to the Army program of $6.3 million for 14,520 projectiles and a reduction to the Marine Corps program of $3.2 million for 7,480 projectiles.

Army representatives said the following:

--The canister problem had been resolved and the manufacturer was producing 500 canisters a day, which would yield 10,000 to 11,000 a month if the daily rate was maintained.

--The Army planned to increase the load, assemble, and pack (LAP) rate above the 1-8-5 rate to produce the fiscal year 1986 program on schedule.

The Army has not yet demonstrated that the 500-a-day rate can be maintained and has not assessed the costs associated with increasing the LAP operations to greater than 1-8-5. Also, the Army's plan for fiscal year 1987 would require only a 1-8-5 rate. For these reasons, we believe the Army's original plan to operate at the 1-8-5 level is preferable to producing this new item at a greater than 1-8-5 basis and then decreasing to 1-8-5 in subsequent years.

MICLIC and 5-inch rocket motor, MK22

Both the Army and Marine Corps are requesting funding for MICLICs and 5-inch rocket motors, as shown in table 2.23.

Table 2.23

	Army		Marine Corps	
	Quantity	Cost	Quantity	Cost
		(millions)		(millions)
MICLIC:				
M58A3	1,018	$12.3	269	$3.2
M68A2	103	1.2	-	-
Total	1,121	$13.5	269	$3.2
Rocket motors	1,412	$ 5.4	1,123	$4.1

The M58A3 line charge consists of 6-inch-long explosive blocks attached to a 350-foot nylon line. The line charge, containing a total of 1,750 pounds of explosive, is projected into a mine field with a 5-inch rocket and detonated. This clears an area 5 meters wide and 90 to 110 meters long. The M68A2 is a nonexplosive charge used for training. An Army procuring activity official told us each M68A2 could be used four times.

The M58A3 and M68A2, as well as the predecessor line charges, are produced on the same production line at the Milan AAP, Tennessee. The production line has a maximum capacity of 210 line charges per month.

Our analysis of undelivered quantities from prior year programs disclosed that the Army would be unable to produce most of the fiscal year 1986 MICLIC program quantities by the end of the fiscal year 1986 funded delivery period (Dec. 1987). As of May 1985, about 6,040 line charges from fiscal year 1985 and prior year programs had not been produced. On the basis of the Army's revised schedule, it can produce about 6,176 line charges between May 1985 and December 1987.

Consequently, a fiscal year 1986 program totaling 136 line charges would be producible within the fiscal year 1986 funded delivery period. However, we believe even this quantity is unnecessary because a further production delay of about 1 month is likely because of delays in testing the newly developed M1134A1E1 fuze. This would cause an additional 146 line charges to be delivered beyond the funded delivery period.

Army records show that another plant--the Louisiana AAP--is scheduled to begin producing line charges in January 1988 after completion of a fiscal year 1987 facilities project.

Since it is doubtful that any part of the Army's fiscal year 1986 line charge program could be delivered within the funded delivery period, the Army's request of $12.3 million for 1,018 M58A3 line charges and $1.2 million for 103 M68A2 practice charges is not needed. Additionally, it also appears unlikely that any of the fiscal year 1986 Marine Corps program of $3.2 million for 269 M58A3 line charges will be delivered within the funded delivery period. Therefore, the Marine Corps line charge request is also not needed.

Army representatives said the Army now planned to (1) start producing the MICLIC at the Louisiana AAP in February 1986 rather than in January 1988 in order to deliver the fiscal year 1986 program on schedule and (2) build the necessary capacity at the Louisiana AAP by rearranging existing equipment. We could not determine whether such rearrangement could be accomplished by February 1986 nor whether the rearrangement would be a viable

alternative to the Army's proposed fiscal year 1987 facilities project because the Army could not demonstrate that this approach was feasible or achievable.

While there is no problem in producing the MK22 5-inch rocket motors, any reduction in the line charge programs should be accompanied by a corresponding quantity reduction in the rocket motor program in order to maintain the appropriate balance between the two. If the Army's fiscal year 1986 M58A3 and M68A2 programs are eliminated, the request for 1,412 rocket motors costing $5.4 million should also be eliminated. On the basis of experience in prior year programs, this would still leave a small excess inventory of rocket motors. However, no reduction should be made to the Marine Corps rocket motor program since there is currently an imbalance between line charges and rocket motors which will be partially alleviated by purchasing the 1,123 rocket motors.

GEMSS mines

The Army is requesting $41 million for GEMSS mines as shown in table 2.24.

Table 2.24

Mine type	Quantity	Cost (millions)
M74 antipersonnel	36,000	$14.5
M75 antitank	134,000	26.5
Total	170,000	$41.0

It is doubtful whether any of the program quantities can be delivered by the end of the fiscal year 1986 funded delivery period because of a large production backlog. As of April 1985, none of the 81,500 M74 mines and only 4,230 of the 278,000 M75 mines from prior year programs had been produced. The backlog is attributed to late type classification[2] and problems with electronic components and safety and arming devices.

The M74 and M75 mines are produced on the same production line at the Iowa AAP. The 1-8-5 capacity for concurrent M74 and M75 production is 9,000 mines a month. Therefore, it would take

[2]Type classification of a new item is required before contracts can be awarded for its procurement.

about 39 months to produce the remaining 355,270 mines from prior year programs on a 1-8-5 shift basis. Production would extend through August 1988, well beyond the fiscal year 1986 funded delivery period, which ends March 1988.

During our review, the Army provided us plans to eliminate the production backlog and produce the fiscal year 1986 program by rapidly accelerating production to the 2-shift level of 18,000 mines per month and dropping to the 1-shift level for the fiscal year 1987 program. The Army plan was to schedule production at the two-shift level and extend the procurement lead time by 5 months. Thus, Army production schedules showed the GEMSS program being on schedule at March 1988, the end of the fiscal year 1986 funded delivery period.

In evaluating these plans, we concluded that the production schedules were overly optimistic because of unresolved problems with safety and arming devices and a lack of experience in producing GEMSS mines. The production line was shut down in February 1985 after 2 months' production because of problems with safety and arming devices. The Army expected production to restart about mid-1985 and to reach the two-shift rate in October 1985 for the M74 and February 1986 for the M75. The Army projects production of the M74 mine to proceed from first production in August 1985 to two shifts in October 1985. In its response to congressional questions on the production of prior year programs, the Army stated that there was a medium risk associated with completing prior year programs in time to permit delivery of the fiscal year 1986 program on schedule. The key risk elements are

--whether corrective actions for the safety and arming devices are minor,

--the ability of electronics and safety and arming producers to provide a steady flow of components to meet an accelerated schedule, and

--the ability of the Iowa AAP to achieve a full two-shift rate.

We do not see the Army's rationale in operating on a two-shift basis during first production of this relatively new item and then dropping to one shift. It seems that just the opposite should occur, i.e., production on a one shift basis until all problems are resolved and then accelerating to two shifts, if necessary. We believe the chances of executing the fiscal year 1986 program on time (even with the extended procurement lead time) are low and see no reason for tying up obligational authority on this item. Further, sufficient

quantities exist in prior year programs to support a 1-8-5 production level through August 1988. Accordingly, we believe the need for a fiscal year 1986 program is highly questionable.

In discussing our review results, Army representatives agreed that 8,000 M74 mines costing $3.2 million and 36,000 M75 mines costing $7.1 million cannot be delivered within the fiscal year 1986 funded delivery period. They said that the Army planned to establish additional component producers to support the load, assemble, and pack operations and by doing so they could produce the rest of the program during the fiscal year 1986 funded delivery period. We continue to believe that it is doubtful that the budgeted quantities can be delivered within the fiscal year 1986 program period because the required production capacity does not exist and there are no assurances that any prospective producers could manufacture and deliver components that will pass first article acceptance tests and in sufficient quantities to support the Army's planned load, assemble, and pack operations.

EXCESSIVE PROCUREMENT LEAD TIMES

The Army has increased the procurement lead times for several items in the fiscal year 1986 ammunition request. Procurement lead time consists of administrative and production lead times. Administrative lead time begins at the start of the fiscal year and represents the time needed to award contracts for components. Production lead time ends as of the month preceding initial delivery of the completed end item. Delivery of a fiscal year program is to be completed normally within 12 months after production lead time ends. This 12-month period is called the funded delivery period.

Department of the Army Procurement Planning and Policy Guidance states that efforts are to be made to reduce lead times. However, the stated administrative and/or production lead times have been increased for several items. Increases for some items apparently result from the need for more time to produce quantities funded in prior years rather than genuine increases in procurement lead time. Our analysis of past contract award dates and first deliveries of various components and end items indicates that about $113.7 million of the funds requested for three items is questionable because of excessive lead times. That is, funds are not needed until fiscal year 1987 or later to meet production lead time requirements. The following reductions could be made if more realistic lead times were used.

--$76 million for 174,720 155-mm. M483A1 HEDP improved conventional munitions (ICM) projectiles,

--$11.9 million for 2,835 155-mm. M731 area denial artillery munitions (ADAM) projectiles, and

--$25.8 million for 14,910 155-mm. M741 remote antiarmor mine systems (RAAMS) projectiles.

155-mm. HEDP ICM projectiles

The Army's fiscal year 1986 ammunition request includes $299.8 million for 689,320 M483A1 ICM projectiles.[3] About $76 million for 174,720 projectiles is questionable because the procurement lead time used by the Army is too long. The Army does not have documentation to support the reorder procurement lead time increase from 12 to 15 months. It appears to have been done so the fiscal year 1986 program would have a later funded delivery period, thus allowing more time to complete the fiscal year 1986 and prior year programs. In addition, the Mississippi AAP may not be able to produce the quantities it is scheduled to produce.

Production history of the M483A1 shows that production could start after only a 12-month lead time. Army records show that the Kansas AAP started production after a 12-month lead time for both the fiscal year 1983 and 1984 programs. The Milan AAP began its fiscal year 1983 production 17 months after the fiscal year began, and its fiscal year 1984 production started 16 months after the start of the fiscal year. However, the delays at the Milan AAP were the result of initial low production rates and delays of prior year programs. The Milan AAP has since increased production and is now operating near the 1-8-5 rate of 38,000 a month. Because of a prior year production backlog, the Milan AAP is still operating 3 to 4 months beyond a funded delivery period, if a 12-month lead time were used.

Fiscal year 1986 production for all three LAP plants--the Kansas, Milan, and Mississippi AAPs--is scheduled over the 12 month period ending in December 1987, reflecting a 15-month procurement lead time. If a one-time program adjustment is made to restore a 12-month procurement lead time, 208,000 M483A1 projectiles scheduled for delivery during October through December 1987 should be deleted from the programs. Allocating this 208,000-projectile reduction between the Army and Marine Corps in proportion to their respective requests would result in a reduction to the Army program of $76 million for 174,720 projectiles and a reduction to the Marine Corps program of $14.5 million for 33,280 projectiles.

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[3]The Marine Corps is also requesting $55.2 million for 127,739 of these projectiles.

Additionally, the Mississippi AAP has experienced numerous start-up difficulties and has yet to achieve a smooth, trouble-free operation. The Mississippi AAP was originally scheduled to load, assemble, and pack 150,000, 240,000, and 240,000 projectiles for the fiscal year 1983, 1984, and 1985 programs, respectively. However, current allocations to the Mississippi AAP have dropped to 16,000, 130,000, and 85,000 for those years. The Army has allocated 240,000 projectiles for production at the Mississippi AAP in fiscal year 1986. Because the Mississippi AAP continues to experience numerous problems, a large production backlog still exists. Even with the Army's reduced allocations, given past experience, it is highly unlikely that the plant can produce its portion of the fiscal year 1986 program.

Since Mississippi's production history is minimal and erratic and its future capabilities are unproven, the Committees may want to provide sufficient funds for only the fiscal year 1986 M483A1 projectile program to allow production at a rate of 57,000 a month--the rate equivalent to operating the Kansas AAP and Milan AAP each at a 1-8-5 rate. Under this approach, these two plants would produce the fiscal year 1986 program and Mississippi would have additional time to eliminate its prior year backlog. However, in the unlikely event that Mississippi does become fully operational as scheduled and was able to eliminate its backlog by the beginning of the fiscal year 1986 funded delivery period, then the fiscal year 1986 program could be allocated between the three AAPs allowing each to operate at its minimum sustaining rate, as is planned for the fiscal year 1987 program.

If the House and Senate Committees on Appropriations reduce the fiscal year 1986 program by 208,000 projectiles corresponding to the reduction in lead time, limiting production rates as suggested above would warrant an additional reduction of about 117,000 projectiles--reductions of $42.8 million for 98,280 projectiles to the Army program and $8.1 million for 18,720 projectiles to the Marine Corps program. However, should the Committees decide not to make the reductions based on excessive lead time and allow a full 12-month program, then this action would represent a reduction of about 129,360 projectiles at a cost of $56.3 million to the Army program and 24,640 projectiles at a cost of $10.7 million to the Marine Corps program.

Army representatives said that the procurement lead time had been increased to 15 months because should-cost studies might be required for projectile metal parts contracts and time was needed to satisfy small business requirements and award contracts for miscellaneous components. However, full should-cost studies are not performed for every fiscal year program,

and when they are done, they can begin before the fiscal year starts. In addition, the procurement process can and usually does begin before the fiscal year starts. Therefore, we continue to believe the Army has overstated the procurement lead time and a reduction of $76 million for 174,000 projectiles is warranted.

ADAM

Both the Army and Marine Corps are requesting funds for the ADAM, as shown in table 2.25. The M731 and M692 are produced on the same production line at the Louisiana AAP. The models differ in their preset times for mines to self-destruct.

Table 2.25

Model	Army		Marine Corps	
	Quantity	Cost (millions)	Quantity	Cost (millions)
M731	6,295	$26.5	9,939	$41.8
M692	-	-	9,235	38.9
Total	6,295	$26.5	19,174	$80.7

The ADAM projectile containing 36 antipersonnel mines is fired from a 155-mm. howitzer, and the mines are ejected from the projectile while it is in flight. The mines arm when they hit the ground and explode when disturbed or when the timing devices cause them to self-destruct.

The Army is using a 20-month procurement lead time in the fiscal year 1986 budget submission. This is a 5-month increase over the 15-month procurement lead time used in the fiscal year 1985 budget submission. Our analysis of past contract award dates and first delivery of the long lead time component indicates a 15-month rather than a 20-month procurement lead time is more appropriate. Use of a 15-month procurement lead time would dictate a $48.2 million reduction to the total Army and Marine Corps programs.

The 20-month procurement lead time for the ADAM projectile is based on an 8-month administrative lead time and a 12-month production lead time. However, actual administrative and production lead times for the fiscal year 1984 program were 3 months and 12 months, respectively, for a total of 15 months. Furthermore, a 13-month procurement lead time should have been

possible since delivery of the long lead time component to the Louisiana AAP began within 11 months. Army procurement officials said that it had taken about 2 months from the time all components were received at the ammunition plant until they were assembled into end items. Allowing 11 months for long lead time items and the additional 2 months for assembly would result in a total procurement lead time of 13 months. In addition, actual administrative lead time for the fiscal year 1985 program was 4 months with delivery of the long lead time component estimated to start 11 months later. Adding the 2 months for the components to enter production suggests a 17-month procurement lead time for the fiscal year 1985 program. However, given the fiscal year 1984 experience and the fact that the Army has procured the pacing component from the same manufacturer for several years, it seems that production lead time could be reduced to at least 15 months. Accordingly, we see no basis for the Army's using a 20-month procurement lead time in its fiscal year 1986 program.

Restoring a 15-month procurement lead time would change the end of the funded delivery period from May 1988 to December 1987. Therefore, 11,469 projectiles from the fiscal year 1986 program would not be completed within the funded delivery period, and the total program should be reduced by that quantity. Allocating this reduction between the Army and Marine Corps in the ratio of their proposed programs to the total program would result in a reduction to the Army program of $11.9 million for 2,835 projectiles and a reduction to the Marine Corps program of $36.3 million for 8,634 projectiles.

Army representatives have agreed that the procurement process begins before the start of the fiscal year but have said that a 20-month lead time is required because of potential delays in awarding contracts for base components because of the competitive procurement process. However, as discussed above, the Army's actual experience shows that a 15-month lead time is achievable, especially since the actual pacing component deliveries have decreased from 17 months for the fiscal year 1982 program to 11 months for the fiscal year 1984 program.

RAAMS

Both the Army and Marine Corps are requesting funding for the RAAMS, as shown in table 2.26. The M741 and M718 are produced on the same production line at the Iowa AAP. The models differ in their preset times for mines to self-destruct.

Table 2.26

Model	Army		Marine Corps	
	Quantity	Cost (millions)	Quantity	Cost (millions)
M741	41,379	$71.6	9,042	$15.6
M718	-	-	8,068	14.0
Total	41,379	$71.6	17,110	$29.6

The RAAMS projectile containing nine antiarmor mines is fired from a 155-mm. howitzer, and the mines are ejected from the projectile while it is in flight. The mines are armed when they hit the ground and explode when activated or when the timing devices cause them to self-destruct.

The Army increased procurement lead time from 15 to 20 months. This increase does not appear justified because the time needed to obtain long lead time components supports a 15-month lead time. Use of a 15-month lead time dictates a $36.3 million reduction to the total Army and Marine Corps programs.

Because the RAAMS procurement reorder lead time increased to 20 months, deliveries of the fiscal year 1986 program are scheduled to begin in June 1987. However, delivery of the electronic lens assemblies (which the Army identifies as the pacing components) is scheduled to begin in October 1986, or 8 months earlier. Projections for the fiscal year 1987 program show all lens assemblies being delivered before the first completed fiscal year 1987 program projectiles are delivered.

Past experience supports a 15-month procurement lead time. The delivery of the electronic lens assemblies for the fiscal year 1984 program began in November 1984 with a quantity of 70,000. About 214,000 assemblies were delivered in the following 4 months. Production of the fiscal year 1984 M741 projectiles began in December 1984 with a quantity of 1,156 projectiles. Therefore, production began within a 15-month procurement lead time after the start of the fiscal year. Additionally, funds for this program were not released until early December 1983, which indicates a 15-month procurement lead time is feasible even when funding is delayed. However, because a producer of one component (pusher plates) went out of business, fiscal year 1983 M718 production is still going on at a rate of only about

60 percent of the minimum sustaining rate. As a result, production of the fiscal year 1984 program was not expected to resume until July 1985, about 5 months later than scheduled.

Because of the past experience described above, a 20-month procurement lead time apparently is not necessary to procure all components and initiate production. Rather it merely provides a longer time for fiscal year 1985 and prior programs to be produced and still allow the fiscal year 1986 program to be delivered within a stated funded delivery period. In our opinion, the lead time should be reduced from 20 to 15 months. This would change the end of the funded delivery period from May 1988 to December 1987. About 21,000 RAAMS projectiles from the fiscal year 1986 Army and Marine Corps programs are scheduled to be delivered after December 1987 and could be eliminated from the fiscal year 1986 RAAMS program. Allocating this quantity to the Army and Marine Corps in proportion to their respective programs results in reductions to the Army program of $25.8 million for 14,910 projectiles and to the Marine Corps program of $10.5 million for 6,090 projectiles.

As with the ADAM projectile, the Army said that a 20-month lead time was required because of potential delays in awarding contracts for components because of the competitive procurement process. However, as discussed above, the Army's actual experience supports a 15-month lead time.

ITEMS REQUIRING SPECIAL ATTENTION

120-mm. mortar cartridges

The Army is requesting $45.5 million in fiscal year 1986 to procure 132,000 of the 120-mm. mortar cartridges, as shown in table 2.27.

Table 2.27

Cartridge type	Quantity	Cost (millions)
High explosive	83,000	$30.3
Illuminating	8,000	4.0
Smoke	41,000	11.2
	132,000	$45.5

Initial funding of $28.1 million for 100,000 120-mm. cartridges was allocated as part of the congressional increase in fiscal year 1985 funding for war reserve materiel.

In September 1984, the Chief of Staff of the Army approved the 120-mm. mortar system as the replacement for the current 4.2-inch mortar system. The Army has informed the Committees that the operational advantages of the 120-mm. system outweigh its increased cost over the 4.2-inch system. The advantages include increased range, accuracy, lethality, and reliability and greater commonality of training with the 60-mm. and 81-mm. mortar systems.

The Army will procure the entire system off the shelf from a foreign producer. In response to Committee questions, the Army said it had chosen a foreign producer because its objective was to acquire and field the 120-mm. system as quickly as possible and neither the 120-mm. mortar nor its ammunition were currently produced in this country.

As of May 1985, the Army's position was that the system would be procured competitively. This will require an estimated 3 months more than dealing with a single source, because of evaluation and shoot-off testing of ammunition produced by each competing contractor.

Army representatives acknowledged that the program had experienced much slippage. With competitive procurement, contract award is planned for December 1985, with first deliveries 1 year later. Army representatives informed us that these dates could slip and that contractor production rates and capacities had not been identified. Recent plans called for fielding the 120-mm. mortars and ammunition for evaluation with the 9th Infantry Division in fiscal year 1986. As of May 1985, however, an official with the Army's 120-mm. mortar program indicated the mortars and ammunition could not now be fielded before the second quarter of fiscal year 1987.

155-mm. chemical projectiles

The Army has requested $21.7 million for binary chemical projectiles. This program requires special Committee attention because a site has not yet been chosen for production of one of the components and problems have occurred during proveout of operations at the LAP plant. See p. 81 for further discussion of the 155-mm. chemical projectile program.

CONCLUSION

The House and Senate Committees on Appropriations should not provide the total amount of funds requested for (1) 12 items

because inventory will exceed requirements, (2) 4 propelling charge and 1 fuze program because an imbalance with projectile inventories will result, (3) 4 items because unit cost estimates are overstated, (4) 3 items for which procurements are premature because of unresolved technical problems, weapon deployment, or failure to meet contract specifications, (5) 8 ammunition items because total program quantities cannot be delivered on schedule, and (6) 3 projectile programs because of excessively long procurement lead times.

Also, uncertainties surrounding the acquisition plans for the 120-mm. mortar system and production problems with 155-mm. chemical projectiles could result in delays and cost increases in these programs.

RECOMMENDATION

We recommend the House and Senate Committees on Appropriations reduce the Army's ammunition appropriation request by $580.2 million for 34 items as shown in appendix VIII.

NAVY AMMUNITION PROGRAM

The Navy's fiscal year 1986 request includes $954.3 million for 30 ammunition budget lines. We examined the Navy's justification for items representing $829.3 million, or 87 percent of the total request. Appendix IX shows the items reviewed and our recommended adjustments to the request.

We believe the request should be reduced by $139.4 million for the following reasons:

--$24.2 million for two types of practice bombs is not needed since the inventory would exceed requirements.

--$5.7 million for two budget line items is not needed because the items were incorrectly priced.

--$57.9 million for the Gator Weapon and two machine gun ammunition items is not needed because the planned procurements are premature.

--$12.8 million for two line items is not needed because they cannot be produced within the funded delivery period.

--$17.3 million for 76-mm. ammunition is not needed because unneeded funding and components from prior years can be used to produce this item.

--$21.5 million for the Bigeye bomb is unnecessary because of unresolved technical problems.

In addition, there are unresolved issues concerning the 5-inch semiactive laser-guided projectile, the MK83 general purpose bomb, Airboc systems, and the 5-inch 54-caliber high fragmentation (HI FRAG) cartridges.

INVENTORY WILL EXCEED REQUIREMENTS

The $76.5 million request for practice bombs could be reduced by $24.2 million because, in our opinion, the procurement lead times indicated for two bombs are longer than necessary and would result in excess inventory.

MK 76 practice bombs

The $19.9 million requested for 958,900 MK76 practice bombs is based on a 15-month procurement lead time. However, deliveries from the fiscal year 1984 program began in September 1984. Therefore, the actual procurement lead time from the

beginning of the fiscal year was only 11 months. By using a 15-month lead time in the fiscal year 1986 requirement computation, the Navy provides for consumption through December 1987. However, using the actual 11-month lead time for the fiscal year 1984 program requirements should provide for consumption only through August 1987. Therefore, the Navy's fiscal year 1986 requirement should be reduced by the quantity to be consumed in the 4 months after August 1987: 225,933 bombs valued at $4.7 million.

Navy officials commented that while it was true that the fiscal year 1984 lead time was 11 months, this was caused by a one-time effort by the contractor to accelerate deliveries. They said that the 15-month lead time was based on 9 months' administrative lead time, 4 months' production lead time, and 2 months for acceptance in Navy inventory and therefore was valid. However, we calculated the actual 11-month procurement lead time of the fiscal year 1984 purchase by counting from the beginning of the fiscal year until the month the material was available to the Navy. Therefore, our figure reflects the total procurement time needed to obtain the material. Furthermore, the single manager's production schedule shows that lead time for reordering this item is only 9 months. Allowing 2 additional months for acceptance in Navy inventory would result in a total procurement lead time of 11 months rather than the 15 months cited by the Navy.

MK 82 NTP practice bombs

The $23.9 million requested for 66,900 MK82 NTP practice bombs is based on a 30-month procurement lead time. However, deliveries from the fiscal year 1983 program began in May 1984; therefore, the actual procurement lead time was 19 months. By using a 30-month lead time in computing the fiscal year 1986 requirements, the Navy provides for consumption through March 1989. However, on the basis of the 19-month lead time of the fiscal year 1983 program, requirements should provide for consumption only through April 1988. Therefore, the Navy's fiscal year 1986 requirement could probably be reduced by a quantity equal to 11 months of consumption after April 1988: 54,725 bombs valued at $19.5 million.

Navy officials commented that when the fiscal year 1986 budget was developed, the most current actual data available upon which to calculate production lead time was from the fiscal year 1982 procurement. This procurement was severely delayed and resulted in a 30-month lead time. Officials said that more recent data from the fiscal years 1983 and 1984 procurements indicated that a lead time of 24 months was more typical for this item.

We believe that the Navy should base its lead times for the fiscal year 1986 program on the most recent data available. Deliveries from the fiscal year 1983 buy began in May 1984, and data regarding these deliveries should have been used for planning the fiscal year 1986 program.

OVERSTATED UNIT COST ESTIMATES

A total of $5.7 million of the request for the following line items is not needed because unit cost estimates are overstated:

--$5 million for 16-inch ammunition items and

--$0.7 million for other ship gun ammunition.

16-inch ammunition

The $7.9 million request for 16-inch ammunition could be reduced by $5 million because the Navy's budget is based on overstated unit cost estimates.

--The $2.8 million requested for 700 blind, load, and plug projectiles is overstated by about $1.8 million. The request is based on a unit cost of $4,068.13; a February 20, 1985, unit cost estimate by the single manager is $1,458.83.

--The $4.1 million requested for 2,055 propelling charges is overstated by about $3.2 million. The request is based on a unit cost of $2,009.46. The single manager provided an estimate, dated February 20, 1985, of $440.12 per propelling charge.

Navy officials agreed with our analysis and told us the revised unit cost estimates were received after the budget request was submitted and that the revised estimates considered savings realized from using projectile bodies and propellants that are available from current inventories. They also told us that savings from lower unit costs could be used to complete a product improvement program for 16-inch submunition projectiles and to procure additional propelling charges.

Other ship gun ammunition

The $18.4 million request for other ship gun ammunition includes about $1.6 million for 1,900 60-mm. smoke cartridges. This request should be reduced because the unit cost estimate was overstated. Navy officials told us that the request was based on the single manager's verbal unit price quotation of $848.42 per cartridge. However, on February 8, 1985, the single

manager provided a written cost estimate of $59.80 a cartridge. According to Navy representatives, this estimate has since increased to $77.80 a cartridge. Using the latest estimate, a reduction of $1.5 million appears warranted.

However, the request for 1,900 smoke cartridges is not considered an economic order quantity. The Navy could purchase 12,100 cartridges to achieve the desired inventory objective at the end of the fiscal year 1986 funded delivery period. The cost of 12,100 cartridges, based on the latest $77.80 unit cost estimate, would be $941,380, or about $0.7 million less than the amount requested.

In commenting on the unit price difference, Navy officials told us they believed any savings realized from lower unit costs should be provided to offset critical shortages of other items.

PREMATURE PROCUREMENT

A total of $57.9 million of the Navy's request for three items is, in our opinion, premature for the following reasons:

--$44.7 million for Gator weapon is premature because production approval for the program has been delayed.

--$7.2 million for 25-mm. machine gun ammunition is premature because the gun system has unresolved technical problems.

--$6 million for 30-mm. machine gun ammunition is premature because the ammunition supports an unfunded program.

Gator Program

The $44.7 million requested for 1,380 Gator weapons is premature because production approval for the Gator program has been delayed. Also, additional delays are likely because the Gator still needs to be tested with a new proximity fuze. In addition, the Chief of Naval Operations has not approved expending the fiscal year 1985 Gator funds.

On June 1, 1983, the Deputy Chief of Naval Operations (Air Warfare) granted approval for limited Gator production in fiscal year 1984, and 406 Gators were procured with a MK339 fuze. According to a Navy official, the Gator requires level, loft, and dive delivery capability, but testing disclosed that the MK339 fuze was unsuitable for other than level delivery. To meet all delivery requirements, the Gator needed a different fuze. The Navy selected a new proximity fuze, the FMU-140/B, for potential use with Gator and several other weapon systems.

The Navy's fiscal year 1985 budget provided funding of $31.6 million for the Gator program, but this amount was subsequently reduced to $25.5 million. The fiscal year 1985 program budget data showed that Gator would be approved for full production in April 1985, but the approval was rescheduled for September 1985. However, testing of Gator with the FMU-140/B fuze cannot start until at least October 1985, resulting in additional delay. Furthermore, the deputy program manager advised us that execution of the fiscal year 1985 Gator program had been delayed because the FMU-140/B fuze had not yet been approved for use with Gator.

Even if the FMU-140/B is approved for use with Gator, testing cannot begin unless the computer software packages for the aircraft scheduled for testing with Gator--the A-6, A-7, F-18, and AV-8B--are available. Although the Navy is uncertain when these packages will be available, it expects a package for the A-6 to be available in October 1985. The Navy has not decided whether Gator testing with the FMU-140/B fuze would begin when the Navy receives the software package for the A-6 or would be delayed until all aircraft packages are available, an uncertainty that has prevented the Navy from establishing a firm Gator test schedule.

Because (1) the testing of Gator with the FMU-140/B fuze is uncertain and (2) the Navy still has not used the fiscal year 1985 funding of $25.5 million for the Gator program and will probably not do so until it completes the tests with the FMU-140/B fuze, we believe the fiscal year 1986 request for $44.7 million is premature.

Navy officials disagreed for two reasons. First, they said Gator's use was not dependent on the FMU-140/B fuze, and second, they believed the Navy would be able to procure all of its fiscal year 1985 request on time.

Navy officials told us the Gator could still use the MK339 fuze, and a quality assurance problem causing the MK339's limited delivery capability had been identified and corrected. Our review disclosed that the fiscal year 1986 Gator weapon request included the cost of the FMU-140/B fuze, not the cost of the MK339, which is $3,635 a unit less. If the Navy intends to use the MK339 in the Gator, its request should be reduced by $5 million to reflect the lower cost estimate.

We believe that because (1) the Navy had not yet tested the MK339 to make sure its limited delivery problem had indeed been corrected, (2) the FMU-140/B fuze has not yet been tested with the Gator, and (3) the fiscal year 1985 program has not yet been approved by the Chief of Naval Operations, the request for Gator is premature and should not be funded in fiscal year 1986.

25-mm. ammunition

The $7.2 million request for 25-mm. ammunition should not be funded because previous test firings of the GAU-12/A 25-mm. gun system damaged the aircraft using it and the results of current efforts to correct the problem are not expected to be known until June 1986, when the aircraft is tested with the GAU-12/A gun system.

The Navy is developing a 25-mm. armor piercing incendiary (API) cartridge for use with the GAU-12/A gun system being developed for use on the AV-8B aircraft. This cartridge is expected to make the Navy capable of defeating light to medium armor. The gun system will also use two Army-developed items--a high explosive incendiary (HEI) cartridge for use against "soft" targets, like trucks, and a target practice cartridge. The fiscal year 1986 budget request shows that the Navy has funds totaling $11 million for the 25-mm. HEI and API ammunition from the fiscal years 1984 and 1985 programs. In addition, the fiscal years 1984 and 1985 programs include $23.1 million for the 25-mm. TP round.

In fiscal year 1986, the Navy plans to procure the 25-mm. cartridges shown in table 3.1.

Table 3.1

Type cartridge	Unit price	Quantities	Total amount
25-mm. API	$44.37	132,000	$5,856,840
25-mm. HEI	31.50	44,000	1,386,000
			$7,242,840

The January 1984 initial quick-look report for operational test and evaluation phase III states that operating the GAU-12/A gun system subjects the AV-8B aircraft to damage from fragments. Further, the report recommends the Navy correct this problem before operational test and evaluation takes place.

However, the March 1985 operational test and evaluation phase I interim report states that testing of the AV-8B aircraft with the GAU-12/A gun system had been suspended after fragments damaged the aircraft during flight testing. Navy officials explained that debris and projectile fragments could damage the

aircraft if it flew too close to the target area. This situation prompted the Naval Air Systems Command to issue recommendations on how to fire 25-mm. ammunition safely.

These officials further stated that the Naval Weapons Station at China Lake, California, had recently been given $75,000 to develop 25-mm. ricochet pattern which in turn would be used to develop safe delivery tactics and safety zones. They also said that June 1986 was the projected date for the next AV-8B/GAU-12/A gun test, which would determine whether the revised delivery tactics were effective.

Navy officials stated that deferring procurement until fragmentation patterns and delivery tactics were defined and tested would delay reaching inventory objectives. However, we believe that until testing shows that the gun can be safely fired, there is no need to build up 25-mm. inventories.

Therefore, procuring additional 25-mm. ammunition before the Navy resolves the fragmentation problem is, in our opinion, premature. Procurement should be deferred until testing shows that the GAU-12/A 25-mm. gun system can be safely fired from the AV-8B aircraft.

30-mm. ammunition

The $6 million request for 30-mm. cartridges is unnecessary because it would provide stock for a program that has not yet been funded. The Navy's fiscal year 1985 budget also contains $2.2 million for 30-mm. ammunition. The 30-mm. ammunition is to be used with the A-4 and F-4 aircraft after they have been retrofitted with 30-mm. guns. Navy officials told us that the research and development program to retrofit the guns on the aircraft had not been funded. Further, they advised us that until the research and development were completed, they could not estimate the time and funding needed to complete the retrofit program.

Navy officials agreed with our statements of facts concerning the 30-mm. ammunition, but believed funds should be provided for the 30-mm. ammunition because they expected to fund the research and development effort by reprogramming funds. We believe it is premature to procure any 30-mm. ammunition before the Navy receives funding for this research and development program since the ammunition is not needed until the guns have been installed on the aircraft.

DELIVERIES NOT WITHIN FUNDED DELIVERY PERIOD

A total of $12.8 million of the Navy's request for the following items should not be funded because it is questionable

whether requested quantities can be produced within the funded delivery period:

--$9.1 million for RR-179 chaff and

--$3.7 million for the MK25 JATO rocket motor.

RR-179 chaff

The Navy's $91.7 million request for airborne expendable countermeasures includes $11.2 million to purchase 44,640 rolls of RR-179 chaff. The Navy's budget backup data shows that 3,720 rolls of the RR-179 will be delivered per month between May 1987 and April 1988. Currently, the Navy has only one production source for this item. In addition, the item specifications are proprietary and the Navy does not have a technical data package. Navy personnel told us that the maximum existing production rate for RR-179 chaff was an estimated 700 rolls per month. At a production rate of 700 a month, the Navy could receive only 8,400 rolls before the end of the funded delivery period. Thus, 36,240 rolls, valued at about $9.1 million, would be delivered outside the funded delivery period.

According to the Navy, the current producer has additional production capacity in reserve. The Navy also stated that when the producer received the fiscal year 1986 order, this reserve equipment would be activated and could produce up to 6,600 rolls of chaff per month. Currently, this contractor can produce 1,750,000 pounds of chaff a year, or about 3,645 RR-179 rolls a month. Thus, without increasing production capacity, the planned fiscal year 1986 buy of RR-179 chaff would require almost all of the contractor's existing production capacity. However, this contractor also produces RR-171, RR-170, and RR-136 chaff.

The contractor does have additional production equipment in reserve, but this equipment is not ready to use. The contractor would need time, money, and additional personnel to place the equipment into production. The contractor has had excess capacity since at least 1981, when the Navy estimated that it would take about $1.7 million and as many as 2-1/2 months to get the reserve equipment ready for full production. In addition, the contractor would have to recruit and train additional personnel to operate the machines.

Finally, although the contractor has indicated that production levels could be increased to satisfy the planned fiscal year 1986 requirements, we question whether this would happen. Not only will increased production require resources, it may not be cost effective when follow-on requirements are considered. The projected fiscal year 1987 RR-179 buy is 28,800

rolls, or 2,400 rolls a month. Thus, the fiscal year 1987 production level would be about 1,300 rolls a month lower than fiscal year 1986's level. It is questionable whether the contractor would incur the added costs of increasing the production capacity to satisfy the requirements for 1 year of production since the contractor would then have excess capacity the following year.

MK25 JATO

The Navy's $15.6 million request for JATOs includes about $10.6 million to purchase 1,718 MK25 rocket motors. The production schedule in the Navy's budget backup data shows that deliveries are scheduled to be made between April 1987 and March 1988 at a rate of about 143 a month. Because of technical problems, the MK25 rocket motor production line has been shut down. In addition, the Navy has a backlog of 4,586 rocket motors to be delivered, an amount that does not include the fiscal year 1986 request for an additional 1,718 motors.

A complete rocket motor must include an MK188 igniter. The current rocket motor contractor subcontracts for the igniter production, and the contractor currently has only one subcontractor capable of producing acceptable igniters. For the last igniter procurement action (fiscal year 1984 program), the single manager advised the Navy that the contractor could not produce more than 125 igniters a month. Although the production line capacity for the rocket motors is estimated to be 250 a month, the lower igniter production level would limit the number of rocket motors that could be completed each month.

Considering the availability of igniters, a large portion of the planned fiscal year 1986 buy would be delivered outside the funded delivery period ending March 1988. We estimated that 5,707 motors could be produced before the funded delivery period ends. Thus, 597 MK25's, costing about $3.7 million, would not be delivered within the fiscal year 1986 funded delivery period.

The Navy representatives told us there were now two qualified sources for the MK188 igniter which together could produce 750 igniters a month and with these two sources, the contractor could produce the complete rocket motors within the funded delivery period.

Even with two igniter producers, however, the Navy might not be able to receive the motors within the funded delivery period because, as mentioned previously, the MK25 rocket motor production line has been shut down due to technical problems. The contractor has submitted proposals to correct these problems, but the Navy must test the proposals before it will approve deviations. Until such approval is granted, the MK25

production line will remain shut down. In addition, a shortage of material used in making the propellant delayed the new producer's igniter production.

Additionally, because the consumption and due-in asset data used in computing the requirements is incorrect, we believe that some of the requested funds are not needed. On the basis of the Navy's current noncombat expenditure requirements as of August 1984, the consumption data is overstated by 175 motors valued at $1.1 million. The requirements computation shows due-in assets of 3,225 from fiscal year 1984 and prior year funding. However, our review of the procurement files showed that due-in assets as of September 30, 1984, were actually 3,479. Thus, the due-in assets were understated by 254. The inventory objective would be satisfied by the planned fiscal year 1986 buy. After computing the requirements using the correct consumption and due-in asset data, we found that the Navy would need only about 1,289 MK25s to meet the fiscal year 1986 inventory objective--$3.7 million less than the fiscal year 1986 request.

PRIOR YEAR FUNDING AND COMPONENTS AVAILABLE

The Navy has requested about $17.3 million in fiscal year 1986 procurement funding for the 76-mm. ammunition program. Unused components and unneeded funds from prior year programs are available to satisfy the fiscal year 1986 procurement requirements.

The Navy's budget requests are based on funding for complete rounds. Because requirements changed, the Navy purchased more component parts in fiscal years 1984 and 1985 than it needed. The unused component parts will be used in the Navy's fiscal year 1985 and 1986 programs. For instance, 16,000 projectile bodies originally purchased for the fiscal year 1984 blind, load, and plug procurement will be used for a fiscal year 1985 acquisition of variable time nonfragmentation (VTNF) cartridges. The Navy received about $10.4 million in fiscal year 1985 funding for 15,609 VTNF cartridges. On the basis of a unit cost of $68.10 a projectile body, the Navy will have about $1.1 million in excess fiscal year 1986 funds by using the unneeded bodies from the earlier buy. In addition, the fiscal year 1986 budget request is based on funding for 9,645 high explosive variable time and 8,264 VTNF cartridges. Excess projectile bodies originally intended for other fiscal year 1984 and 1985 procurements will be available for use in the 1986 programs. On the basis of an expected fiscal year 1986 unit cost of $70.90 per projectile body, using these available components would save the Navy about an additional $1.3 million.

Finally, the current budget backup data indicates that fiscal year 1984 funding of about $17.5 million is available for ammunition product improvements. The Navy initially estimated that in fiscal year 1984, it would require about $800,000 for product improvements. Navy officials told us they plan to use only this amount for product improvements and that the excess funding of about $16.7 million was available for other budget activities. We believe since the funds were provided for 76-mm. ammunition, the excess funds should be used to satisfy the fiscal year 1986 requirements.

Savings from the use of component parts purchased in previous fiscal years and redirection of unneeded funds from the fiscal years 1984 and 1985 programs could more than satisfy the Navy's 76-mm. program requirements. We believe the House and Senate Committees on Appropriations could reduce the Navy's fiscal year 1986 request by $17.3 million and direct the Navy to use unneeded funds and component parts from fiscal years 1984 and 1985 to fulfill the fiscal year 1986 requirements.

Navy representatives agreed with the reduction.

BIGEYE BOMB TECHNICAL PROBLEMS

The Navy's $21.5 million request for Bigeye bombs should not be funded in fiscal year 1986 because of technical problems discussed in appendix VII.

ITEMS REQUIRING SPECIAL ATTENTION

The Navy is requesting $164.2 million for the following items which require special attention:

--$104.3 million for the 5-inch semiactive laser-guided projectile (SALGP),

--$11.4 million for the MK83 general purpose bomb,

--$26.5 million for Airboc systems, and

--$22 million for two 5-inch 54-caliber HI FRAG cartridges.

5-inch SALGP program

The Navy is requesting fiscal year 1986 initial production funding of about $104.3 million for the 5-inch SALGP projectile

program. The request includes about $98 million for an initial sole-source procurement of 500 tactical rounds and $6.3 million for government-production engineering support costs.

The 5-inch projectile is a gun-launched rocket-sustained terminally guided projectile designed to be fired from a modified 5-inch 54-caliber MK45 gun mount. A propelling charge fires the projectile from the gun, and a rocket motor supplies the added energy necessary to achieve the desired range. A semiactive laser target-illumination system provides terminal guidance. The Navy has initiated a full-scale engineering program to develop a shipboard-located laser-illumination system called SEAFIRE for the projectile. The first operational SEAFIRE system is scheduled for delivery about the middle of fiscal year 1989. The 5-inch guided projectile can also be used with remotely located land- or air-based target-illumination systems, such as the Army Ground Laser Locator Designator, the Navy A-6 target recognition active multisensor, the Marine Corps OV-10 aircraft, and the Marine Corps Modular Universal Laser Equipment.

The fiscal year 1986 budget backup data indicates that because of procurement lead time considerations, the Navy will award a sole-source contract for 500 initial production projectiles to meet the initial operational capability requirements of the SEAFIRE systems on DD-963 and DDG-993 class ships. The Navy plans to award this contract in January 1986 with first delivery anticipated in January 1988. The first SEAFIRE system is expected to be installed in the lead ship of the DDG-51 class ships around mid-fiscal year 1989. The DD-963 and DDG-993 class ships that are to receive the first SALGPs are to receive SEAFIRE designators during subsequent overhauls.

Cost growth

The Navy initially requested procurement funding for SALGP in fiscal year 1982. The Secretary of the Navy later withdrew this request because acquisition costs appeared high. The Navy reinstated the program in fiscal year 1983 after restructuring the acquisition plan, obtaining the prime contractor's commitment for an average unit cost of $44,000 a projectile (fiscal year 1981 constant dollars) over the life of the program, and determining the resulting program to be affordable.

Procurement budget estimates have increased significantly since the fiscal year 1982 estimates. A comparison of budget estimates prepared in January 1981 and February 1985 shows the following:

--Cost of the initial production buy has more than tripled. In January 1981, the Navy estimated that it would spend about $29.8 million in fiscal year 1983 funds

for 500 initial production rounds. The Navy is now requesting $104.3 million for the initial production buy of 500 projectiles.

--Cost of follow-on procurements have substantially increased. In January 1981, the Navy estimated that in fiscal years 1984, 1985, and 1986, it would need a total of $312.2 million for 6,875 projectiles at an average cost of $45,000. In February 1985, the Navy estimated that it would need a total of $609.8 million for 8,300 projectiles at an average unit cost of $74,000.

Navy officials acknowledged that current cost estimates represented substantial increases over previous estimates; however, they told us the original estimates were based on much larger procurement quantities, higher production rates, and the establishment of a joint production facility for the Army Copperhead and Navy 5-inch guided projectiles. Moreover, they said earlier estimates did not consider producibility changes and investments in automated test equipment.

Congressional guidance

The fiscal year 1984 defense authorization bill stipulates that none of the funds may be obligated or expended for the 5-inch SALGP until the Secretary of the Navy has acquired a technical data package that could be used to solicit a second production source. The House Appropriations Committee report for the fiscal year 1985 budget request reiterated the Committee's belief that the Navy should vigorously pursue a competitive procurement strategy for the SALGP. Also, the Committee believes that the billion dollar cost of the program qualified it as a major system which should be periodically reported in DOD's Selected Acquisition Reports. This would give the program the visibility it needs in order for the Congress to monitor costs and program performance.

The program manager told us that the Navy was analyzing the costs and benefits of developing a second competitive production source for SALGP. The Navy expected to have the results of this analysis by about June 1985 and also expected to acquire a technical data package during the fourth quarter of fiscal year 1985. In addition, program officials advised us they were awaiting direction from higher Navy authority to begin submitting Selected Acquisition Reports to the Congress, as the House Appropriations Committee desires. Program officials would like to postpone reporting until after decisions associated with second-source procurement strategies are completed. The Committee may want the Navy to notify the Committee that it has complied with congressional guidance before providing fiscal year 1986 funding.

Current Navy plan

The unit cost for the 500 initial production projectiles requested in the fiscal year 1986 budget is about $196,000. The Navy also plans to request fiscal year 1987 funding authorization for a sole-source procurement of 2,000 projectiles each costing about $84,800. However, according to the program manager, if the Navy decided to begin using a second production source, the quantity would probably be reduced to 1,200 and the residual funds would be used to establish a second source.

The Navy plans to procure initial production rounds solely from Martin Marietta, while it seeks ways to develop a second qualified source to use for the outyears. Martin Marietta requires a 3-year start-up period. If the second supplier also needs a 3-year start-up period, the two suppliers would not be ready to compete for production rate procurement quantities until fiscal year 1991. By that time, about 35 percent of the inventory objective would have been procured sole source from Martin Marietta.

In view of previous funding requirements, the Navy's current plan to procure initial production rounds from a single source while looking for ways to develop a second qualified source bears close monitoring. The budget estimates for the current and future years are based on the assumption that all SALGP units would be procured sole source.

MK83 general purpose bomb

The Navy's $148.6 million request for general purpose bombs includes $11.4 million for MK83 bombs. We believe the MK83 request bears close monitoring because the Army production facility where the bombs are to be loaded will not be available when the bombs are delivered. In addition, the Navy does not know the bomb's capabilities when filled with a new insensitive munition, and the request includes a higher price to obtain steel of greater strength than may be needed.

The Navy production schedule shows that the MK83's are scheduled to be delivered between April 1988 and March 1989. However, the production facility that would be used to load the bomb will not be available for the fiscal year 1986 program. The Navy plans to load the bombs at a naval facility still to be selected.

The fiscal year 1986 program will use a new insensitive munitions fill called PBX, and the Navy also plans to fill all subsequent MK83 procurements with PBX. A Navy official told us tests to determine whether the PBX fill will decrease the

MK83's capabilities were still in progress and approval of the engineering change needed to use the new fill was not expected until October 1985.

Further, we were told the unit cost of the MK83 with PBX included a cost of $486 for higher strength steel. Until testing is complete, however, the Navy does not know whether higher strength steel is needed. In view of this consideration and those discussed above, we believe the request for $11.4 million for MK83 bombs bears close monitoring by the Committees.

Navy representatives agreed with the facts pertaining to the MK83 bomb.

Airboc system

The Navy's fiscal year 1986 request for airborne expendable countermeasures includes $26.5 million to purchase, for the first time by the Navy, 14,335 Airboc systems. We believe that this item requires close monitoring for several reasons: (1) results of recent operational testing are not yet known, (2) the Navy's acquisition strategy calls for buying a substantial quantity of the total requirement in the first year, and (3) the current chaff production level will need to be increased in order to meet the combined fiscal year 1986 requirements.

The technical evaluation of Airboc was completed in April 1984, and operational evaluation was completed during the last week of March 1985. The fiscal year 1986 budget backup data shows that Airboc was scheduled to receive production approval in April 1985, but approval has been delayed and the Navy now expects it sometime during the fourth quarter of fiscal year 1985. The Airboc operational testing, scheduled for August 1984, was delayed until March 1985. Navy program management officials cited two reasons for the delay:

--the Navy did not provide the necessary development funds in a timely manner, and

--the Navy testing facility could not schedule the tests sooner because other projects had higher priority.

The budget backup data indicates that the quantity the Navy plans to buy for fiscal year 1986 represents a significant portion of Airboc's total requirement and the quantity the Navy tentatively plans to buy for fiscal year 1987 is much smaller. Since Airboc will be purchased for the first time in fiscal year 1986 and since the Navy expects to award the contract competitively, the planned purchase of such a large quantity in the first year of production rather than during subsequent years appears questionable. Navy program management officials cited

need as the principal reason for this accelerated acquisition plan. Although we do not question the Navy's need for Airboc, in our opinion, obtaining such a large quantity all at once could cause production problems.

The Airboc system is intended to provide protection for ships against incoming enemy missiles and aircraft by dispensing chaff as a decoy so that incoming missiles and aircraft are confused over which is the target. Airboc is one of many chaff items planned for purchase during fiscal year 1986. Currently, the Navy receives chaff from only two sources. Although other producers might be capable of packaging chaff, these two sources must produce all the basic chaff material. At our request, the Navy analyzed the total chaff requirements included in the fiscal year 1986 budget and determined that the current production level of the two chaff producers must be increased to satisfy all the planned fiscal year 1986 requirements. Airboc requires a relatively large amount of chaff. Out of all the end items needing chaff, Airboc ranks third in pounds required. Even without Airboc, however, chaff requirements for other items in the fiscal year 1986 budget--RR-170, RR-171, and RR-179--will exceed the current production capacity of the two chaff manufacturers.

In view of the accelerated acquisition strategy for Airboc and the current chaff production levels, we believe that this item should be closely monitored during the fiscal year 1986 budget review process.

5-inch 54-caliber HI FRAG

The $67 million request for 5-inch 54-caliber ammunition components includes about $22 million for two types of HI FRAG cartridges. This request bears close monitoring by the Committee for the following reasons:

--The Navy has not completed the HI FRAG low-rate initial production buy originally funded in fiscal year 1981.

--Contract awards for component parts in support of the fiscal years 1984 and 1985 procurements were delayed.

--Fiscal year 1986 unit price estimates for projectile bodies are substantially higher than fiscal year 1984 and 1985 contract costs.

Delay in completion of low-rate initial production

The Navy requested and received fiscal year 1981 funding for 10,000 low-rate initial-production HI FRAG cartridges. The

Navy also requested fiscal years 1982 and 1983 funding for HI FRAG cartridges, but the procurements were not executed as planned. As of February 15, 1985, only 1,065 rounds of the 10,000-unit low-rate buy had been delivered.

The Navy attributes delays in completing low-rate production buys to one subcontractor's inability to produce aft-section projectile bodies that meet the Navy's performance specifications and to the failure of subcontractors responsible for fuze protective caps and retaining rings to produce acceptable products. For example, as of February 15, 1985, the aft-section projectile body producer had delivered about half the required quantity. Navy officials told us they expected the remaining bodies to be delivered by July 1985.

Delay in award of production rate contracts

The Navy received about $20.2 million for 18,764 HI FRAG rounds in fiscal year 1984. Procurement lead time for HI FRAG includes 4 months for administrative time--the time needed to award contracts--plus 23 months for production and loading. Actual contract awards for component parts did not start until November 1984--13 months after the start of the fiscal year.

The Navy also received about $18.5 million for 23,415 HI FRAG rounds in fiscal year 1985. The fiscal year 1985 component parts will be obtained through options to the fiscal year 1984 awards. The subcontractors for the 1984 and 1985 procurements of projectile bodies (both forward and aft section), fuze protective caps, and retaining rings are different from those used in the low-rate initial production. Lack of experience by producers of component parts for the production-rate buys could contribute to additional delays in completing the HI FRAG cartridges.

Questionable unit price estimates

For fiscal year 1986, the Navy is requesting about $22 million for 22,733 HI FRAG cartridges. The Navy's budget request is based on unit price estimates the Army single manager provided in February 1985. Backup documentation for the single manager estimate shows that the most expensive components of the HI FRAG cartridge are the projectile body sections. Unit price estimates for the fiscal year 1986 projectile body requirements are significantly higher than the actual contract prices in fiscal years 1984 and 1985. Table 3-2 compares projectile body costs.

Table 3.2

FY 1986 budget request				Costs of HI FRAG projectile bodies			
			Budgeted unit price for complete		FY 1986 estimated	Actual contract cost	
Round	Quantity	Amount Requested	round	Item	cost	1984	1985
HE-CVT	10,000	$ 8,276,000	$ 827.23	FWD Body	$270.68	$100.32	$ 85.37
				AFT Body	270.68	159.09	143.99
MT-PD	12,733	13,742,000	1,079.28	FWD Body	270.68	100.32	85.37
				AFT Body	270.68	159.09	143.99

As shown in table 3.2, the Navy budgeted $541.36 per cartridge for the projectile body requirements in fiscal year 1986 compared to actual contract prices of $259.41 in fiscal year 1984 and $229.36 in fiscal year 1985.

Using actual fiscal year 1984 projectile body contract prices, the budgeted unit prices are overstated by about $282 per cartridge, or a total of about $6.4 million. The overstatement is $312 per cartridge using actual fiscal year 1985 prices, or a total of about $7.1 million.

CONCLUSION

We believe the House and Senate Committees on Appropriations should not provide the total amount of funds requested for (1) two types of practice bombs because inventory would exceed requirements, (2) two items because they were incorrectly priced, (3) two items for which procurement may be premature, (4) two items because it is doubtful total program quantities can be delivered on schedule, (5) one item because a critical component is still under development, (6) one item because unneeded funding and components from prior years can be used to procure the item, and (7) one item because of unresolved technical problems.

Also, there are some potential problems with four additional items which could lead to further cost growth and/or schedule delays.

RECOMMENDATION

We recommend the House and Senate Committees on Appropriations reduce the Navy's ammunition appropriation request by $139.4 million for 11 items as shown in appendix IX.

MARINE CORPS AMMUNITION PROGRAM

The Marine Corps requested $488.9 million in fiscal year 1986 for ammunition. We reviewed the justification for 32 items representing $401 million, or 82 percent of the total request. We believe that the request should be reduced by $75.5 million for the following reasons:

--$13.8 million of the total funds requested for four items is unnecessary because total program quantities cannot be delivered on schedule.

--$61.3 million for three items is not needed because procurement lead times can be shortened permitting procurement to be delayed until fiscal year 1987.

--$400,000 for 105-mm. target practice cartridges is not needed because unit cost estimates are overstated.

DELIVERIES NOT WITHIN FUNDED DELIVERY PERIOD

Our review indicates that $13.8 million of the Marine Corps' request for four items is not needed in fiscal year 1986 because, in our opinion, the total quantities requested will not be delivered within the fiscal year 1986 funded delivery period. The items and amounts are

--$6.1 million for 184,000 25-mm. M792 high explosive incendiary-tracer cartridges,

--$1.3 million for 72,000 40-mm. M430 high explosive dual purpose cartridges,

--$3.2 million for 7,480 155-mm. M825 white phosphorous smoke projectiles, and

--$3.2 million for 269 M58A3 mine clearing line charges (MICLIC).

These questionable amounts are a result of program reductions allocated between the Army and Marine Corps proposed programs with respect to each service's proportionate share of the total program request. For further details and information concerning the delivery problems of the above items, see pages 29 through 34.

EXCESSIVE PROCUREMENT LEAD TIMES

Our review indicates $61.3 million of the funds requested for three items is not needed because, in our opinion, procurement lead times are too long. Therefore, the following items and amounts can be deleted if more realistic lead times are used:

--$14.5 million for 33,280 155-mm. M483A1 high explosive dual purpose improved conventional munitions projectiles,

--$36.3 million for 8,634 155-mm. M731 and M692 area denial artillery munitions projectiles, and

--$10.5 million for 6,090 155-mm. M741 and M718 remote antiarmor mine system projectiles.

These potential reductions are based on allocations made between the Army and Marine Corps with respect to each service's proportion to the total program request. For further details and information regarding procurement lead times for these items see pages 36 through 42.

OVERSTATED UNIT COST ESTIMATES

The Marine Corps request for training ammunition includes $2.4 million for 11,724 M724, 105-mm. discarding sabot target practice tank cartridges. The request should be reduced by $0.4 million because the unit cost included for projectile metal parts is overstated. As discussed for the Army's request (see p. 23), the unit cost should be reduced from $206.47 to $172.50.

CONCLUSION

The House and Senate Committees on Appropriations should not provide the total funds requested for (1) four ammunition items because total program quantities cannot be delivered on schedule, (2) three projectile programs which had funded delivery periods established with excessive procurement lead times, and (3) one ammunition item because the unit cost estimate is overstated.

RECOMMENDATION

We recommend the House and Senate Committees on Appropriations reduce the Marine Corps' ammunition appropriation request by $75.5 million as shown in appendix X.

AIR FORCE AMMUNITION PROGRAM

The Air Force originally requested $1.6 billion for ammunition in its fiscal year 1986 program. This request was reduced by $103.7 million on February 6, 1985, when the Secretary of the Air Force advised the Committees that the Air Force would cancel the low level laser-guided bomb program after the fiscal year 1985 program. We reviewed the justification for 22 items, representing $1.4 billion, or 93 percent of the modified request. Appendix XI shows the items we reviewed and lists our recommended adjustments to the modified request. We believe the requests for 11 items could be reduced by a total of $297 million for the following reasons:

--$244.6 million of the $644.4 million requested for four items is not needed because deliveries cannot be made during the fiscal year 1986 funded delivery period.

--$13.4 million of the $94.5 million requested for Durandal bombs is not needed because the unit cost estimate is overstated.

--$8.4 million requested for the FMU-130 high-altitude fuze is not needed because the Air Force plans to have a fuze with both low- and high-altitude capabilities developed and ready for production in fiscal year 1988 and currently has an inventory of about 3 million high-altitude fuzes that is adequate to meet the Air Force's interim needs.

--$3 million of the $100.4 million requested for 30-mm. training cartridges is not needed. It was included to procure component parts needed to support a container repair program that will not be continued for the fiscal year 1986 program.

--$2.2 million of the $13.9 million requested for the improved 2,000-pound bomb is not needed because $0.2 million is included for unneeded single manager fees and an additional $2 million for management reserves is excessive.

--$2 million requested for the timer, actuator, fin, and fuze (TAFF) program is premature because the TAFF is not yet ready for production.

--$1.3 million of the $3.9 million requested for rapid munitions assemblies is not needed because, on the basis

of current Air Force guidance, it exceeds the amount that should be budgeted for engineering change orders and proposals.

--$22.1 million for the Bigeye bomb is premature because of unresolved technical problems.

DELIVERIES NOT WITHIN FUNDED DELIVERY PERIOD

A total of $244.6 million of the $644.4 million requested for the following items should not be provided because requested quantities cannot be delivered within the fiscal year 1986 funded delivery period:

--$222.4 million for combined effects munitions,

--$19.9 million for FMU-139 fuzes,

--$1.4 million for 40-mm. HE cartridges, and

--$0.9 million for MJU-7B flares.

Combined effects munition

About $222.4 million of the $552.9 million request for combined effects munitions is premature because 9,375 units are not scheduled for delivery within the appropriate fiscal year 1986 funded delivery period.

Whether the total quantity of combined effects munitions requested can be delivered within the funded delivery period depends on the procurement lead time used for the fiscal year 1986 program. Procurement lead time for a first year buy is typically a few months longer than for buys in subsequent years. The Air Force's budget backup data for the fiscal year 1986 program shows the procurement lead time for combined effects munition as 24 months for the first year buy and 19 months for reorder buys in subsequent years.

The first year the Air Force bought combined effects munitions was fiscal year 1984. Our review of the contract for the 1984 program showed that by the time the first end item for that year's program is delivered, 24 months will have elapsed. Administrative lead time took 11 months, and production lead time is projected to take 13 months. The acquisition plan for this contract was approved in February 1984, 4 months after the fiscal year began. If acquisition had been approved earlier, administrative lead time might have been shorter.

For the combined effects munition buy in the fiscal year 1985 request, according to the Air Force's response to congressional questions, the Air Force needed procurement lead

time of 21 months--6 months administrative lead time and 15 months production lead time. Budget backup data the Air Force is using to support its 1986 request, however, shows that for both fiscal years 1985 and 1986, the Air Force needs 24 months' procurement lead time: 8 months administrative and 16 months production. The program manager told us that while the correct total lead time for the program was 24 months, it instead consists of 11 months administrative and 13 months production.

Our review disclosed that the Air Force was able to attain a 24-month procurement lead time for the fiscal year 1984 program even though:

--it was the first significant buy,

--warranty provisions had to be written into the contract, and

--the acquisition plan was not approved until 4 months after the start of the fiscal year.

The fiscal year 1984 program contract was signed 7 months after the acquisition plan was approved, an interval that should be decreased for 1986, and further reductions may be possible since the warranty provisions are fairly well worked out. In addition, the two producers have been identified and should have proved their production capabilities before the fiscal year 1986 program begins. In short, the Air Force has demonstrated its ability to achieve a 24-month procurement lead time under fairly adverse conditions and will gain additional experience in contracting for the fiscal year 1985 program. In addition, in June 1985, an Air Force official told us that the Air Force expects to award the contracts for the fiscal year 1985 program in September 1985 and that Air Force plans are to try to negotiate a fiscal year 1986 option clause in the contract. If this is done, the reorder lead time would be even shorter than 19 months.

As a result, we believe the Air Force should be able to meet its previously stated target of a 19-month reorder procurement lead time for the fiscal year 1986 program. With this lead time, the fiscal year 1986 funded delivery period would end in April 1988 rather than September 1988. Since the fiscal year 1985 program is scheduled for delivery through September 1987, the Committees should provide funding for 7 rather than 12 months production in the fiscal year 1986 program. Program schedules show deliveries of 1,875 units a month beginning in October 1987 and ending in September 1988. Five months of production, representing 9,375 units costing about $222.4 million, could probably be deleted from the fiscal year 1986 program and programmed for a later fiscal year.

The Air Force contends a 24-month lead time for the fiscal year 1986 program is appropriate and the program should be fully funded.

FMU-139 fuze

About $19.9 million of the $61.7 million request for the FMU-139 fuze is not needed, in our opinion, because 25,000 fuzes will not be delivered within the fiscal year 1986 funded delivery period. Also, a safety problem with the fuze may endanger aircraft and their crews.

Supporting budget documents show a 14-month lead time for the FMU-139 fuze. With this lead time, the funded delivery period would begin in December 1986 and end in November 1987. However, the program schedule shows that deliveries are to begin in April 1987 and end in March 1988. Consequently, 4 months of production--yielding 25,000 fuzes valued at about $19.9 million--are scheduled to take place beyond the fiscal year 1986 funded delivery period. According to the program manager, the delivery schedule for the fiscal year 1986 program slipped because of delays in the fuze test program, which prevented contract options for fiscal years 1984 and 1985 from being exercised on schedule.

In addition, during tests conducted over the past year, the Air Force determined that the FMU-139 fuze had a safety problem that could endanger the aircraft and crew. The FMU-139 fuze can be used on bombs dropped from both high and low altitudes. A sensing device in the fuze automatically selects the proper arming delay time for the bomb when it is dropped. According to the program manager, under certain conditions, the fuze could erroneously select a low-altitude bomb-arming delay time when a high-altitude delay time was needed. Since the arming delay time for low-altitude delivery is obviously shorter than for high-altitude delivery, the bomb could detonate before the aircraft is a safe distance away.

The Air Force has identified several preliminary solutions to the problem. These include (1) installing the fuze in the tail fuze well of bombs instead of the nose fuze well to prevent the fuze sensing device from detecting the swaying of the bomb's nose upon release and (2) decreasing the speed of the aircraft.

Because the safety problem is potentially severe, the Appropriations Committees may wish to defer providing additional funds for production of the FMU-139 fuze until the Air Force assures the Committees it has resolved the problem.

Air Force representatives generally agreed with our analysis and said the Air Force needs to reexamine the FMU-139 fuze program because completion of the initial operational

testing and evaluation has slipped to at least October 1985 and the production decision has not yet been made. In view of the safety problems and program slippage, it is unlikely that the budgeted quantity could be produced within the fiscal year 1986 funded delivery period. Therefore, we believe a reduction of $19.9 million for 25,000 fuzes is warranted.

40-mm. cartridges

The $16.6 million requested for 40-mm. HE cartridges could be reduced by about $1.4 million because an estimated 82,000 of the M430 cartridges would not be delivered within the fiscal year 1986 funded delivery period. See pages 30 and 31 for further discussion of this item.

MJU-7B flare

The $13.3 million request for the MJU-7B flare could be reduced by about $0.9 million because 1 month's production is scheduled beyond the fiscal year 1986 funded delivery period.

Supporting budget documentation shows a 17-month lead time for the MJU-7B flare; however, the Air Force's production schedule is based on an 18-month procurement lead time. Air Force officials said that the 18-month lead time was used because the computer the Air Force used to determine requirements for ammunition items was programmed to accept lead times in 3-month increments. Therefore, the lead time was increased from 17 to 18 months. When the correct lead time of 17 months is used, 1 month's production, representing about 47,000 flares valued at about $0.9 million, would extend beyond the funded delivery period.

OVERSTATED UNIT COST ESTIMATE

The $94.5 million request for 3,483 Durandal bombs could be reduced by about $13.4 million because the unit cost estimate is overstated.

The Air Force based its fiscal year 1986 request on a unit cost estimate of $27,132 provided by the French contractor Matra. However, a $22,333 unit price was established in an Air Force contract awarded in December 1984 for the fiscal year 1985 program. By applying DOD's inflation factor to this unit cost, a reasonable unit cost for the fiscal year 1986 program would be about $23,272. At this unit cost, the request could be reduced by about $13.4 million.

Air Force officials agreed that the lower unit cost could be expected if the French inflation and exchange rates continued to favor the United States. However, they also said they have

no way of predicting the rates that will be in effect when the contract for the fiscal year 1986 program is awarded.

UNNEEDED FUZES

The $8.4 million request for 10,500 FMU-130 high-altitude fuzes is questionable because the Air Force plans to modify the fuze so it can be used for both high- and low-altitude bomb deliveries. The Air Force project manager said the dual capability fuze should be ready for production by fiscal year 1988. In the interim, the Air Force has a large inventory of other fuzes that could be used to meet its needs.

Production of the FMU-130 fuze is not warranted because the fuzes it is to replace, M-904 and M-905 fuzes, are adequate to meet Air Force needs. The FMU-130 fuze was developed to replace the M-904 and M-905 fuzes because they (1) failed to consistently function at the times selected for fuze detonation and (2) must be assembled from several different containers, a process both time consuming and logistically burdensome. However, recent tests of these fuzes show they function within specified design tolerances. Because the Air Force currently has about 3.4 million of these fuzes in its inventory, it plans to conduct additional tests to evaluate their performance against various targets and delivery conditions. These tests are to provide a basis for comparing these fuzes with the FMU-130 and are to be completed before the FMU-130 production decision is made. A production decision was scheduled for June 1985 but was not made.

In addition, the project manager for the FMU-130 fuze stated that the Tactical Air Command did not currently require the FMU-130 high-altitude fuze but was interested in obtaining a fuze with a dual capability when it became available. He explained that the Air Force was moving away from high-altitude bomb delivery and toward high-speed low-altitude delivery to improve delivery aircrafts' chances of surviving.

Because the Air Force plans are to have a dual capability fuze ready for production in fiscal year 1988 and because the Air Force currently has a large inventory of high-altitude fuzes to cover interim needs, the Committees should not provide the $8.4 million request for 10,500 FMU-130 high-altitude fuzes.

Air Force representatives agreed that the FMU-130 fuze should be tested with the M904 and M905 fuzes to determine whether the older fuzes could meet Air Force needs. Until these tests are completed, we believe it is premature to fund the FMU-130 fuze program.

CONTAINER REPAIR PROGRAM DISCONTINUED

About $3 million of the $100.4 million request for 30-mm. training cartridges is included to support a container repair program that the Air Force plans to discontinue after the fiscal year 1985 program.

The Air Force established a container repair program to support the fiscal year 1984 program for 30-mm. training cartridges and continued it for the fiscal year 1985 program. The budget requests for the fiscal years 1984 and 1985 programs for 30-mm. training cartridges included funds to buy new tube and strap assemblies to support the container repair program.

When the repair program was started, the Air Force had a sizable inventory of used containers; however, the 2-year repair program has depleted this inventory and there are not enough containers left to repair to justify continuing the program. According to an Air Force official, the container repair program will be started again in about 3 years, to support the fiscal year 1989 program for 30-mm. cartridges.

Air Force representatives agreed that the program should be reduced by $3 million because they no longer plan to repair containers in the fiscal year 1986 program.

UNNEEDED SINGLE MANAGER FEES AND QUESTIONABLE AMOUNT BUDGETED FOR MANAGEMENT RESERVES

The $34.1 million request for 2,000-pound high-explosive bombs includes $13.9 million for 1,000 improved 2,000-pound bombs. About $0.2 million of the $13.9 million is not needed because it is for Army single manager fees which will not be incurred because the item is not scheduled to transfer to the Army's single manager until fiscal year 1987.

The $13.9 million request also includes about $2 million for management reserve which, in our opinion, is not needed. The $2 million represents about 20 percent of hardware costs and was included in addition to about $0.5 million for engineering change orders and proposals, an amount representing about 5 percent of hardware costs. An Air Force official stated that the amount included for management reserve was based on the risk assessed for the uncertainty in the program and the lack of actual cost data and that to estimate a budget without assessing risk would not be responsible. Another Air Force official stated that funds included for management reserve and for engineering change orders and proposals were based on the uncertainty in the program's definition and schedule and in the technologies to be employed.

Air Force representatives agreed that amounts should not be included for either Army single manager fees or management reserves and contend such amounts identified separately in preliminary estimates were deleted from the final budget. Our review of the Air Force's budget backup data disclosed that the amounts were not deleted, but rather added to the estimates for the various components. Therefore, we believe the $0.2 million for Army single manager fees and $2 million for management reserves should not be provided.

TESTING MAY DELAY PRODUCTION

The $2 million request for 5,000 timer, actuator, fin, and fuzes (TAFF) program is, in our opinion, premature because required testing may not be accomplished in time to allow production to begin in fiscal year 1986.

All testing of the TAFF has been completed except operational tests. An Air Force official stated that these tests may be difficult to schedule because only one B-1B bomber was available for testing the weapons. According to this official, the lack of aircraft for testing, coupled with the low priority assigned to the TAFF program, may prevent testing from being completed in time to initiate production in fiscal year 1986.

Air Force representatives agreed that if the TAFF testing on the B-1B is delayed significantly, the TAFF delivery schedule would be impacted and, depending on the extent of the delay, deliveries may not begin in fiscal year 1986. They said the B-1B flight tests are scheduled for February to June 1986. In view of the status of the test program, we believe it is premature to provide funds for the TAFF in fiscal year 1986.

EXCESS AMOUNT BUDGETED FOR ENGINEERING CHANGE ORDERS AND PROPOSALS

The $3.9 million request for rapid munitions assembly systems could be reduced by about $1.3 million because on the basis of Air Force guidance, the proposed budget exceeds the amount that should be budgeted for engineering change orders and proposals.

The request includes about $1.4 million for engineering change orders and proposals, a figure representing about 64 percent of hardware costs. In a report prepared for the House Appropriations Committee's Survey and Investigation staff, the Air Force stated that the amounts budgeted for engineering change orders and proposals should not exceed 5 percent of the hardware procurement cost unless documentation justified the excess. The Air Force has not justified the need for

engineering change orders and proposal funds to exceed 5 percent of hardware costs. Under the 5-percent limit, the amount for engineering change orders and proposals should not exceed about $0.1 million, $1.3 million less than the request.

Air Force representatives agreed that the program should be reduced by $1.3 million.

BIGEYE BOMB TECHNICAL PROBLEMS

The $22.1 million requested for Bigeye bombs is not needed because of unresolved technical problems discussed in appendix VII.

CONCLUSION

We believe the House and Senate Committees on Appropriations should not provide the total funds requested for (1) four items because deliveries cannot be made during the fiscal year 1986 funded delivery period, (2) one item because the unit cost estimate was overstated, (3) two items because they are not needed in fiscal year 1986, (4) one item because excessive allowances for fees were included, (5) one item because it is not ready for production, (6) one item because of excessive amounts for engineering change orders and proposals, and (7) one item because of unresolved technical problems.

RECOMMENDATION

We recommend the House and Senate Committees on Appropriations reduce the Air Force's ammunition appropriation request by $297 million for 11 items as shown in appendix XI.

AMMUNITION PLANT MODERNIZATION AND EXPANSION PROGRAM

The Army's fiscal year 1986 ammunition production base support request of $368.4 million includes $241.9 million for 16 projects to modernize and expand the ammunition production base and $14 million for components for proveout of production facilities for the projects. We reviewed five projects representing about $157 million of the $241.9 million requested.

We believe funds should not be provided for the $31.15 million project to modify, convert, and reactivate production lines for producing explosives called RDX and HMX at the Holston AAP because final designs were not completed before budget submission. In addition, the $93.78 million requested for the three projects for Bigeye bomb production should not be provided because of technical problems with the bomb and design/site selection problems with the projects. Further, since we believe Bigeye facility projects should not be funded, we also believe the $4.3 million in the components for proveout of production facilities related to Bigeye need not be funded.

PROJECT 5862447 (RDX/HMX LINES)

This $31.15 million project is to modify, convert, and reactivate the Holston AAP's explosives manufacturing and support facilities. This project, identified as project 5862447, is composed of 13 subprojects and is intended to provide the Holston AAP, the only U.S. supplier of RDX and HMX explosive compositions, with the capability to meet planned future procurement increases.

Congressional guidance since 1976 precludes funding projects when the final design is not complete prior to budget submission. This guidance states

> ". . . the Committee believes . . . completion of final design of each modernization and expansion project prior to submission of the appropriation request will provide a more sound basis for determining the scopes of projects and estimating costs . . ."

According to a Production Base Modernization Agency project engineer, $20 million requested for part of this same effort in fiscal year 1985 was denied by the Congress because the design completion date did not comply with established guidance. He said the Agency's efforts to obtain a waiver from

this guidance for fiscal year 1985 funding had been unsuccessful because a waiver procedure had not been established. The Agency acknowledged that this fiscal year 1986 project also did not comply with the congressional guidance but believed that unless funding was provided, the Holston AAP would be unable to meet the Five Year Defense Plan buys.

As of April 1985, final designs were incomplete for 12 of 13 subprojects. One of those subprojects for automotive equipment did not require a final design. The designs for the subprojects requiring final designs range from zero to 45 percent complete. However, the project engineer believes that when all subproject final designs are completed, the costs will not change significantly. The current estimated cost of $31.15 million is based on previously completed similar work, engineering judgment, and empirical cost estimating where designs have not been completed.

Since the Congress denied funding for a part of this project last year because design was not complete, it seems the Army should have taken necessary actions to ensure that designs would be completed for the fiscal year 1986 program. Omnibus engineering funds are provided each year for design work; therefore, funding should have been available. Apparently, the Army did not assign high enough priority to completing final design even though the Army cites a pressing need for the facilities. In view of the congressional guidance, we see no need to provide funding for project 5862447. Indeed, approval of facilities projects prior to completion of final design may serve to encourage submission of partially designed projects in the future.

BIGEYE BOMB PROJECTS

We believe the Army's $93.78 million request for three Bigeye bomb production facilities and $4.3 million request to demonstrate that two of the three proposed production lines can operate as designed should not be funded in fiscal year 1986 because of technical problems with the bomb. (See app. VII.)

CONCLUSION

We believe the House and Senate Committees on Appropriations should not provide the funds requested for four modernization and expansion program projects. The request for RDX and HMX production lines is premature because final designs required by congressional guidance were not completed before budget submission and the requests for three Bigeye production facility projects is premature because of technical problems with the bombs. Also, if the Bigeye projects are not funded, there is no need for funds to demonstrate that the production lines can operate as designed.

RECOMMENDATIONS

We recommend the House and Senate Committees on Appropriations reduce the Army's $368.4 million production base request by $31.15 million for project 5862447 and $93.78 million for three binary munitions projects as shown in appendix XII. In addition, since we are recommending that the binary projects not be funded, the funds requested to demonstrate that the production lines can operate as designed are unnecessary. Therefore, we also recommend that the Committees reduce the Army's $14 million request for Components for Proveout of production facilities by $4.3 million.

BINARY CHEMICAL PROGRAMS

The fiscal year 1986 budget request includes about $163.4 million for two binary chemical weapons. This amount includes $141.68 million for the Bigeye bomb (BLU-80/B) and related production facilities and equipment and $21.7 million for the 155-mm. binary chemical projectile.

The $141.68 million requested for Bigeye bomb procurement and production facilities is premature because

--the Bigeye bomb has not met the established minimum chemical requirement for chemical purity and

--numerous critical technical issues are unresolved.

Further, the $21.7 million request for the 155-mm. binary chemical projectile requires special attention because

--the chemical methylphosphonic dichloride (DC), which is required to manufacture one of the binary chemicals, methylphosphonic difluoride (DF), may not be available to support first-year production and

--problems uncovered during recent efforts to demonstrate that the DF-production and canister-filling production lines at the Pine Bluff Arsenal can operate as designed could delay the production of complete projectiles.

BIGEYE BOMB PROGRAM

This program is a joint service development effort of the Navy and the Air Force. The Army is the support service responsible for developing the binary chemicals used to produce the lethal nerve agent released by the Bigeye.

The Bigeye bomb consists of two major assemblies: the bomb body, containing the liquid chemical QL, and the ballonet, containing the solid chemical sulfur. These assemblies are stored separately until the bomb is readied for use. The bomb's function is to mix the two chemicals and spread the resultant nerve agent (VX). After the aircraft drops the bomb, the mixing sequence is automatically initiated and a proximity fuze triggers the dissemination process at a predetermined altitude.

Funding

Table 7.1 shows a breakdown by service of the $141.68 million fiscal year 1986 budget request for procuring Bigeye bombs and for establishing related production facilities. The Army request includes $93.78 million for three facilities and $4.3 million for facility proveout.

Table 7.1

	Amount (millions)
Navy:	
Procurement	$ 21.50
Air Force:	
Procurement	22.10
Army:	
QL production facility	47.98
QL production facility proveout	3.00
Load, assemble, and pack facility	28.25
Load, assemble, and pack facility proveout	1.30
Metal parts production facility	17.55
Total	$141.68

Minimum chemical purity requirement not met

The Bigeye bomb has not met the operational temperature requirement of minus 40 degrees Fahrenheit to 140 degrees Fahrenheit for producing minimum purity VX within the required time frame. Furthermore, testing has shown that about 30 degrees Fahrenheit to 120 degrees Fahrenheit appears to be the temperature range within which minimum purity VX can be obtained. The current Bigeye attack method, which consists of high-speed low level aircraft fly-in to the target with level loft delivery, causes the chemical mixing process to start at temperatures above 120 degrees Fahrenheit.

The U.S. Army Chemical Research and Development Center (CRDC) has conducted four 120-degree Fahrenheit tests, three 130-degree Fahrenheit tests, and two 140-degree Fahrenheit tests. Only the last 120-degree Fahrenheit test conducted on April 6, 1984, produced minimum purity VX.

None of the 130-degree and 140-degree Fahrenheit tests which were conducted after the last 120-degree Fahrenheit test produced minimum purity VX.

Moreover, according to the minutes of the final increment of the Bigeye Critical Design Review conducted at the Naval Weapons Center, China Lake, California, on October 23-24, 1984, current testing indicates that Bigeye cannot produce agent VX which meets the specified purity over the required temperature range.

Unresolved critical technical issues

An October 1982 test disclosed that when the two chemicals were mixed, the Bigeye experienced a temperature/pressure problem that caused the bomb to rupture at the tail end. Although recent chemical tests show the Bigeye continues to experience a rapid temperature/pressure buildup that can cause internal damage, the hazards to aircraft and personnel have been eliminated by design changes allowing chemical mixing to begin after the Bigeye is dropped. However, this procedure raised technical issues concerning

--the post-release flight stability of the weapon;

--the complete function of the weapon between release and impact at environmental extremes; and

--the effects, if any, of constantly rotating mixing machinery on the VX dissemination pattern.

Although no ruptures have occurred since the October 1982 test, pressure buildup during testing is now controlled by automatically venting the Bigeye when the pressure reaches 300 pounds per square inch. For example, during test LB-36 conducted by the CRDC on December 4, 1984, the pressure reached 300 pounds per square inch at 18 seconds and was automatically vented to 200 pounds per square inch. This procedure was repeated at 32 and 44 seconds.

At 6 seconds into the test, the right side dissemination port deformed in excess of one-half inch. Further, inspection of the impulse cartridge firing device revealed the propellant grain trap had fractured in the shape of a cross and had deformed about one-quarter inch.

The CRDC recommended the dissemination port be reviewed for functional adequacy and the design of the impulse cartridge be refined to both improve the structural integrity of the grain trap and reduce the sulfur injection forces during functioning.

Since current test procedures automatically vent the Bigeye at 300 pounds per square inch, the extent to which internal temperature and pressure would continue to build up in

a live Bigeye remains unknown. It is, therefore, difficult to determine how severe the temperature/pressure buildup problem is and how it would affect Bigeye's operation.

The following other critical technical issues, we believe, must be resolved before any production approval.

--Using the FMU-140 fuze has caused increased risk to reliability. The fuze's required reliability, as specified in its draft test and evaluation master plan, is 90 percent for developmental test and evaluation (DT&E) and 95 percent for operational test and evaluation (OT&E). The final DT&E test report indicates that the fuze has an 86.3-percent reliability.

--Adding a ram air turbine to ignite the gas generator has increased the reliability risk.

--The range of times required to disseminate 90 percent of carried chemical is unknown.

--The bomb's accuracy in delivering an agent of acceptable purity is unproven because the correlation of mix/dissemination simulants with VX agent is incomplete.

--The use of a mix manifold to improve mixing effectiveness has not been fully approved.

Probable delay in approval for limited production

The Navy plans to investigate these unresolved technical issues during DT&E and initial operational test and evaluation (IOT&E). However, a Navy official advised us DT&E had not been completed and IOT&E could not begin until (1) the Chief of Naval Operations certified Bigeye was ready for IOT&E and (2) delivery aircraft software packages were available.

The results of DT&E and IOT&E are needed to assess the effectiveness and operational suitability of the Bigeye weapon system and its readiness for limited fleet introduction. A Navy official advised us the final DT&E report might be available by June 30, 1985, and that IOT&E, including preparation of the final report, would take about 8 months. Therefore, the final report is not expected to be available until February 1986. Moreover, Navy officials advised us computer software packages for delivery aircraft were still unavailable.

The Navy's fiscal year 1986 budget shows limited production is expected to be approved in December 1985.

However, in view of the current status of DT&E and IOT&E, this approval may slip until after February 1986.

BIGEYE PRODUCTION FACILITIES

Since Bigeye chemical testing has shown the weapon has not met its VX purity requirement and there are unresolved technical issues, there is no apparent need to fund the facility projects included in the fiscal year 1986 request. Additionally, the following issues make funding of these projects questionable:

--The load, assemble, and pack and production facilities for the chemical QL final designs have not been completed. Final design for the LAP facility was scheduled for completion in June 1985, and final design for the QL production facility was scheduled for completion in March 1987. To meet congressional guidance, final designs for these projects should have been completed before submission of the fiscal year 1986 budget.

--The Army has not selected the QL production site. Army officials advised us a site selection committee report on whether the QL production facility should be constructed at an Army ammunition plant or a commercial site was being reviewed and a site selection decision would be made in September 1985.

--An Army official advised us potential Bigeye design changes required to enable the weapon to meet its VX purity requirement could result in changes to the metal parts production facility design.

155-mm. CHEMICAL PROJECTILE

The $21.7 million requested for these projectiles should be closely monitored because

--the Army has not yet decided on the location of the production facility for chemical DC, one of the projectile's nonlethal chemicals, and

--problems with the DF production and canister-filling lines at the Pine Bluff Arsenal could delay the production of all-up rounds.

The projectile is an Army-developed item which produces the lethal chemical agent GB when its two nonlethal chemicals--DF and alcohol--are mixed. The chemicals are stored separately until the projectile is readied for use and are

mixed in flight, on the way to the target. Dissemination is accomplished by means of an explosive burster, which is initiated by a point detonating fuze.

DC production facility location is uncertain

The chemical DC is critical to 155-mm. production because it is used to produce DF--one of the projectile's two chemicals. However, the Army has not yet decided on a site for a DC production facility--it expects to construct a facility at either a government or commercial site--and a final decision is not expected until December 1985. Consequently, efforts to demonstrate the planned production line can operate as designed are not planned to begin until September 1988.

The Army plans to produce the DF for the fiscal year 1986 155-mm. procurement from its existing inventory of DC. Although the Army has in inventory about 451,000 pounds of DC, the chemical is about 95 percent or less pure, below the required 98-percent purity for producing DF. Therefore, the Army plans to purify the DC in inventory to 98 percent in order to obtain the DF required for the fiscal year 1986 production. The Army estimates DC purification will cost about $1.9 million and included this amount in the 155-mm. procurement request.

The Army claims sufficient DC is available to meet first-year 155-mm. requirements, but this is questionable because the exact amount of 98-percent pure DC available will be unknown until the existing DC inventory is purified.

Unresolved DF-production and canister-filling line problems

The Army recently began an effort to demonstrate the DF production facility can operate as designed. However, Army officials stated that DF production had been curtailed when small valve and vessel leaks occurred in the DF production line.

Army officials further stated that two unexpected problems had been uncovered during DF canister-filling line proveout. The Army found that nitrogen, which is used to seal out moisture in the DF storage tank, is slightly soluble in DF and that the mixture of DF and nitrogen caused a slight bulge in some of the filled canisters. In addition, the weld used to seal the canister can create a hot spot, causing a hole to burn through the canister.

Army officials advised us they expected to identify actions needed to correct these problems by June 1985; however,

the time required to correct these problems was unknown. Further, the Army was uncertain whether the DF production line leaks were the results of the DF manufacturing process or defective material.

GAO-RECOMMENDED ADJUSTMENTS TO ARMY AMMUNITION REQUEST

Budget line number	Item	Budget request	Recommended adjustments	Adjusted request	Remarks
		------ millions ------			
4	Cartridge, 5.56-mm. ball	$ 18.1	$ -	$ 18.1	-
5	Cartridge, 5.56-mm. blank	12.0	-	12.0	-
6	Cartridge, 5.56-mm. blank, f/saw	2.2	-	2.2	-
7	Cartridge, 5.56-mm. 4 ball/1 tracer	9.6	-	9.6	-
8	Cartridge, 5.56-mm. ball, f/M16A2	25.0	-	25.0	-
9	Cartridge, 5.56-mm. tracer, f/M16A2	6.5	-	6.5	-
10	Cartridge, 7.62-mm. tracer	0.5	-	0.5	-
12	Cartridge, 7.62-mm. 4 ball/1 tracer	25.0	-	25.0	-
13	Cartridge, 7.62-mm. ball	0.7	-	0.7	-
14	Cartridge, 7.62-mm. 4 ball/ 1 tracer, OHF	1.4	-	1.4	-
16	Cartridge, 7.62-mm. special ball	1.9	-	1.9	-

APPENDIX VIII

Budget line number	Item	Budget request	Recommended adjustments	Adjusted request	Remarks
		- - - - - - millions - - - - - -			
17	Cartridge, .22 cal. ball, LR	$ 2.7	$ -1.1	$ 1.6	Inventory will exceed needs. (See p. 6.)
18	Cartridge, 9-mm. ball	1.4	-1.4	-	Inventory will exceed needs. (See p. 7.)
19	Cartridge, .45 cal. ball	2.2	-	2.2	-
20	Cartridge, .45 cal. match	0.8	-0.7	0.1	Inventory will exceed needs. (See p. 8.)
22	Cartridge, .50 cal. 4 ball/1 tracer	9.6	-	9.6	-
23	Cartridge, .50 cal. APIT	1.4	-	1.4	-
24	Cartridge, .50 cal. ball	2.4	-	2.4	-
25	Cartridge, .50 cal. blank	15.0	-15.0	-	Inventory will exceed needs. (See p. 8.)
27	Cartridge, .50 cal. tracer	4.1	-4.1	-	Inventory will exceed needs. (See p. 8.)
28	Cartridge, .50 cal. 4 ball/1 tracer	44.4	-	44.4	-

Budget line number	Item	Budget request	Recommended adjustments	Adjusted request	Remarks
		- - - - - - millions - - - - - -			
57	Cartridge, 120-mm. HE	$ 30.3	$ -	$ 30.3	Requires special attention. (See p. 42.)
58	Cartridge, 120-mm. illuminating	4.0	-	4.0	Requires special attention. (See p. 42.)
59	Cartridge, 120-mm. smoke	11.2	-	11.2	Requires special attention. (See p. 42.)
61	Cartridge, 105-mm. HEAT	47.2	-47.2	-	Inventory will exceed needs. (See p. 11.)
62	Cartridge, 105-mm. TP-T	51.2	-36.6	14.6	Inventory will exceed needs. (See p. 12.)
63	Cartridge 105-mm. TRACE-P	2.3	-	2.3	-
64	Cartridge, 105-mm. DS-TP	89.4	-14.7	74.7	Overstated unit cost estimates. See p. 23.)
65	Cartridge, 105-mm. APFSDS-T	46.8	-4.5	42.3	Overstated unit cost estimates. (See p. 23.)
67	Cartridge, 120-mm. APFSDS-T	59.7	-	59.7	-
68	Cartridge, 120-mm. HEAT	27.3	-	27.3	-

Budget line number	Item	Budget request	Recommended adjustments	Adjusted request	Remarks
		- - - - - - millions - - - - - -			
					Overstated unit cost estimates. (See p. 22.)
42	Cartridge 40-mm. TP	$ 4.8	$ -	$ 4.8	-
43	Cartridge, 40-mm. practice	6.0	-1.4	4.6	Overstated unit cost estimates. (See p. 22.)
44	Cartridge, 75-mm. blank	2.8	-	2.8	-
46	Cartridge, 81-mm. illuminating	15.7	-	15.7	-
47	Cartridge, 81-mm. HE	31.7	-	31.7	-
48	Cartridge, 81-mm. Smoke	12.4	-	12.4	-
49	Cartridge 81-mm. improved	2.4	-	2.4	-
51	Cartridge, subcal. 22-mm. practice charge = 2	1.1	-	1.1	-
55	Cartridge, 4.2-in. illuminating	27.3	-27.3	-	Inventory will exceed needs. (See p. 11.)
56	Cartridge, 4.2-in. smoke, white powder	6.7	-6.7	-	Premature procurement. (See p. 25.)

Budget line number	Item	Budget request	Recommended adjustments	Adjusted request	Remarks
		- - - - - - millions - - - - - -			
29	Cartridge, 20-mm. TP-T	$ 19.3	$ -11.4	$ 7.9	Inventory will exceed needs. (See p. 9.)
31	Cartridge, 25-mm. HEI-T	18.9	-18.9	-	Deliveries not within funded delivery period. (See p. 29.)
32	Cartridge, 25-mm. APDS-T	11.1	-	11.1	-
33	Cartridge, 25-mm. TP-T	37.7	-	37.7	-
35	Cartridge, 30-mm. HEDP	26.0	-26.0	-	Inventory will exceed needs. (See p. 10.)
36	Cartridge, 30-mm. TP	3.8	-	3.8	-
38	Cartridge, 40-mm. TP-T	11.3	-11.3	-	Adequate quantities previously funded. (See p. 25.)
40	Cartridge, 40-mm. HE	31.0	-31.0	-	Same as above and counter measure specifications not met. (See p. 25.)
41	Cartridge, 40-mm. HEDP	48.8	-16.0	32.8	Deliveries not within funded delivery period. (See p. 30.)

Budget line number	Item	Budget request	Recommended adjustments	Adjusted request	Remarks
		- - - - - - millions - - - - - -			
69	Cartridge, 120-mm. TP-T	$ 29.6	$ -	$ 29.6	-
70	Cartridge, 120-mm. TPCSDS-T	29.7	-	29.7	-
71	Projectile, 155-mm. HE, ICM	299.8	-76.0	223.8	Excessive procurement lead time. (See p. 37.)
73	Projectile, 155-mm. smoke	16.3	-6.3	10.0	Deliveries not within funded delivery period. (See p. 31.)
76	Projectile, 155-mm. ADAM	26.5	-11.9	14.6	Excessive procurement lead time. (See p. 39.)
78	Projectile, 155-mm. RAAMS	71.6	-25.8	45.8	Excessive procurement lead time. (See p. 40.)
80	Projectile, 155-mm. Copperhead	235.0	-	235.0	-
81	Projectile, 155-mm. chemical	21.7	-	21.7	Requires special attention. (See p. 43.)
82	Charge, propelling, 155-mm., GB	27.7	-3.3	24.4	Imbalance with projectiles. (See p. 17.)
83	Charge, propelling, 155-mm., WB M4	30.4	-30.4	-	Imbalance with projectiles. (See p. 17.)

Budget line number	Item	Budget request	Recommended adjustments	Adjusted request	Remarks
		- - - - - - millions - - - - - -			
84	Charge, propelling, 155-mm., RB	$ 20.4	$ -	$ 20.4	-
85	Charge, propelling, 155-mm. WB M119	17.8	-17.8	-	Imbalance with projectiles. (See p. 17.)
89	Charge, propelling, 8-in. WB	29.2	-29.2	-	Imbalance with projectiles. (See p. 17.)
92	Fuze, MTSQ, M577A1	49.3	-16.9	32.4	Imbalance with projectiles. (See p. 20.)
93	Fuze, MTSQ M582	10.5	-	10.5	-
94	Primer, Perc.	2.9	-	2.9	-
95	GEMSS AP, M74	14.5	-14.5	-	Deliveries not within funded delivery period. (See p. 34.)
96	GEMSS AT, M75	26.5	-26.5	-	Deliveries not within funded delivery period. (See p. 34.)
97	Canister mine, XM88 (VOLCANO)	1.5	-	1.5	-
98	Canister mine, XM87, (VOLCANO)	2.6	-	2.6	-
99	Mine, AT, BLU-91/B, (VOLCANO)	12.6	-	12.6	-

Budget line number	Item	Budget request	Recommended adjustments	Adjusted request	Remarks
		- - - - - - millions - - - - - -			
100	Mine, AP, BLU-92/B (VOLCANO)	$ 5.0	$ -	$ 5.0	-
101	Motor, rocket, 5 inch MK22	5.4	-5.4	-	Imbalance with line charges. (See p. 32.)
102	Line charge, M58A3 (MICLIC)	12.3	-12.3	-	Delivery not within funded delivery period. (See p. 32.)
103	Line charge, inert M68A2 (MICLIC)	1.2	-1.2	-	Delivery not within funded delivery period. (See p. 32.)
106	Demolition munitions	16.5	-	16.5	-
113	Signals, all types	33.5	-18.6	14.9	Inventory will exceed needs for M5 smoke pots. (See p. 13.)
114	Simulators, all types	28.7	-8.8	19.9	Inventory will exceed needs for M115A2 simulator. (See p. 15.)
	Totala	1,953.8	-580.2	1,373.6	
	Totalb	312.8	-	312.8	
	Total	$2,266.6	$-580.2	$1,686.4	

[a]Total for budget lines reviewed by us.

[b]Total for budget lines not reviewed by us.

APPENDIX IX

GAO-RECOMMENDED ADJUSTMENTS TO NAVY AMMUNITION REQUEST

Budget line number	Item	Budget request	Recommended adjustments	Adjusted request	Remarks
		------millions------			
205	Signal, underwater sound	$ 1.4	$ -	$ 1.4	
208	Skipper	27.6	-	27.6	-
209	General purpose bombs	148.6	-	148.6	MK83 bomb requires special attention. (See p. 58.)
210	Laser-guided bomb kits	22.2	-	22.2	-
211	Walleye	37.6	-	37.6	-
212	Rockeye	8.8	-	8.8	-
213	Zuni 5-inch rocket	20.7	-	20.7	-
214	2.75-inch rocket	28.0	-	28.0	-
215	Parachute flares	2.1	-	2.1	-
216	Machine gun ammunition	27.0	-13.2	13.8	Premature procurement for 25-mm. HEI and API rounds due to technical problems (see p. 50) and premature procurement for 30-mm. rounds due to unfunded program (see p. 51.).
217	Practice bombs	76.5	-24.2	52.3	Inventory will exceed requirements for MK76 (see p. 45) and for MK 82/BDU-45 NTP (see p. 46.)

Budget line number	Item	Budget request	Recommended adjustments	Adjusted request	Remarks
		------millions------			
218	Cartridge and cartridge-activated devices	$ 29.9	$ -	$ 29.9	-
219	Aircraft escape rockets/ catapults	8.1	-	8.1	-
220	Airborne expendable countermeasures	91.7	-9.1	82.6	RR-179 chaff deliveries cannot be made during program period (see p. 52), and Airboc requires special attention (see p. 59).
221	Marine location markers	7.8	-	7.8	-
222	Defense Nuclear Agency material	2.2	-	2.2	-
223	Bigeye bomb	21.5	-21.5	-	Premature procurement due to technical problems. (See p. 55.)
224	Jet-assisted takeoff	15.6	-3.7	11.9	MK25 deliveries cannot be made during program period. (See p. 53.)
225	Gator	44.7	-44.7	-	Premature procurement because a critical component is still under development. (See p. 48.)
226	Miscellaneous air-launched ordnance	0.2	-	0.2	-

Budget line number	Item	Budget request	Recommended adjustments	Adjusted request	Remarks
		------millions------			
243	5-inch/38 caliber gun ammunition	$ 4.5	$ -	$ 4.5	-
244	5-inch/54 caliber gun ammunition	67.0	-	67.0	Requires special attention. (See p. 60.)
245	5-inch guided projectile	104.3	-	104.3	Requires special attention. (See p. 55.)
246	16-inch gun ammunition	7.9	-5.0	2.9	Overstated unit cost estimate for two 16-inch ammunition items. (See p. 47.)
247	Close-in weapon system ammunition	35.2	-	35.2	-
248	76-mm. gun ammunition	17.3	-17.3	-	Prior year funding and excess components are available. (See p. 54.)
249	Other ship gun ammunition	18.4	-0.7	17.7	Overstated unit cost for 60-mm.cartridge, smoke W.P. (See p. 47.)
281	Small arms and landing party ammunition	18.8	-	18.8	-
282	Pyrotechnics and demolition material	25.5	-	25.5	-
287	Shipboard expendable countermeasures	33.2	-	33.2	-
Total[a]		$954.3	$-139.4	$814.9	

[a]We reviewed 87 percent of the amounts requested for listed budget lines ($829.3 million).

APPENDIX X

GAO-RECOMMENDED ADJUSTMENTS TO MARINE CORPS AMMUNITION REQUEST

Budget line number	Item	Budget request	Recommended adjustments	Adjusted request	Remarks
		----- (millions) -----			
1	Linear charges, all types	$ 3.2	$ -3.2	$ -	Deliveries not within funded delivery period. (See p. 63.)
2	Small arms, all types	9.6	-	9.6	-
3	Machine gun, all types	35.0	-7.4	27.6	Deliveries not within funded delivery period. (See p. 63.)
4	Mortar, all types	33.3	-	33.3	-
5	Grenades, all types	2.2	-	2.2	-
6	Rockets, all types	57.2	-	57.2	-
7	Training, all types	29.0	-0.4	28.6	Overstated unit cost estimates. (See p. 64.)
8	Projectiles, 155-mm. all types	214.6	-64.5	150.1	Excessive procurement lead time. (See p. 64.)
10	Projectile, 155-mm. copperhead	52.1	-	52.1	-
12	Fuzes, all types	31.3	-	31.3	-
	Total[a]	467.5	-75.5	392.0	
	Total[b]	21.4	-	21.4	
	Total	$488.9	$-75.5	$413.4	

[a]Total requested for these budget lines. We reviewed requests for items totaling $401 million under these budget lines.

[b]Total for items in budget lines not reviewed by us.

GAO-RECOMMENDED ADJUSTMENTS TO AIR FORCE AMMUNITION REQUEST

Budget line number	Item	Budget request	Recommended adjustments	Adjusted request	Remarks
		----------(millions)----------			
1	2.75-in. rocket motor	$ 22.3	$ -	$ 22.3	-
11	Cartridge, 30-mm. training	100.4	-3.0	97.4	Container repair program discontinued. (See p. 71.)
13	Cartridge, 30-mm. API	30.6	-	30.6	-
16	Cartridge, 40-mm. HE	16.6	-1.4	15.2	Total quantity cannot be produced. (See p. 69.)
18	Cartridge, chaff, RR-170	17.8	-	17.8	-
25	MK-82 inert/ BDU-50	13.4	-	13.4	-
26	Durandal bomb	94.5	-13.4	81.1	Overstated cost estimate. (See p. 69.)
27	Timer, actuator, fin, and fuze	2.0	-2.0	-	Not ready for production. (See p. 72.)
28	BSU-49 inflatable retarder	34.7	-	34.7	-
29	BSU-50 inflatable retarder	10.2	-	10.2	-
30	Bomb, 2,000 lb. high explosive	34.1	-2.2	31.9	Excess management reserve and unneeded single manager fees. (See p. 71.)
33	GBU-15	127.9	-	127.9	-
34	Bomb, 25 pound practice	20.9	-	20.9	-

Budget line number	Item	Budget request	Recommended adjustments	Adjusted request	Remarks
		---------(millions)---------			
37	MK-84 bomb, empty	$ 6.8	$ -	$ 6.8	-
38	CBU-89, TMD/ Gator	202.0	-	202.0	-
39	CBU-87, combined effects munition	552.9	-222.4	330.5	Total quantity cannot be produced. (See p. 66.)
40	Bigeye bomb	22.1	-22.1	-	Unresolved technical problems. (See p. 73.)
42	Aerial tow target	8.4	-	8.4	-
45	Flare, IR MJU-7B	13.3	-0.9	12.4	Total quantity cannot be produced. (See p. 69.)
54	Rapid munitions assembly	3.9	-1.3	2.6	Excess funds included for engineering change orders and proposals. (See p. 72.)
62	FMU-130	8.4	-8.4	-	Unneeded fuze. (See p. 70.)
63	FMU-112/ FMU-139	61.7	-19.9	41.8	Total quantity cannot be produced. (See p. 68.)
	Total[a]	1,404.9	-297.0	1,107.6	
	Total[b]	95.9	-	99.4	
	Grand Total[c]	$1,500.8	$-297.0	$1,207.0	

[a]Total requested and reviewed in these budget lines.

[b]Total for items in budget lines that we did not review.

[c]Excludes $103.7 million for the low level laser-guided bomb program because the Air Force withdrew its request on February 6, 1985.

GAO-RECOMMENDED ADJUSTMENTS TO THE ARMY'S MODERNIZATION AND EXPANSION PROGRAM REQUEST

Project number	Description	Budget request	Recommended adjustments	Adjusted request	Remarks
		- - - - -	- millions - - - - - -		
5860063	Initial production facilities to load, assemble, and pack Bigeye bombs.	$28.25	$-28.25	$ -	Bigeye bomb has unresolved technical problems. (See p. 77.)
5860074	Initial production facilities for Bigeye binary bomb metal parts at the Marquardt Company, Van Nuys, Calif.	17.55	-17.55	-	Same comment as for project 5860063.
5860079	Initial production facilities to produce QL used in Bigeye bombs.	47.98	-47.98	-	Same comment as for project 5860063.
5860127	Initial production facility for the XM900 cartridge metal parts, penetrator and load, assemble, and pack.	32.04	-	32.04	-
5862447	Modify, convert, and reactivate RDX and HMX production lines at the Holston AAP, Tenn.	31.15	-31.15	-	Premature-design not complete. (See p. 74.)
	Total[a]	$156.97	$-124.93	$ 32.04	
	Total[b]	84.93	-	84.93	
	Total[c]	$241.90	-124.93	$116.97	

[a]Total for projects reviewed by us.

[b]Total for projects not reviewed by us.

[c]Since we believe Bigeye facility projects should not be funded, an additional $4.3 million in the Components for Proveout budget line requested to demonstrate that the production lines can operate as designed is unnecessary.

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