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Opportunities For Improving Management Of Ammunition Components

Department of Defense

The Army Armament Command's reporting system does not show the amounts of ammunition components excess to its production needs.

Unneeded components have accumulated because of a lack of an adequate management system to insure that on-hand inventory and due-in components are considered before like components are procured.

LCD-76-431

APRIL 16, 1976

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UNITED STATES GENERAL ACCOUNTING OFFICE

WASHINGTON, D.C. 20548

LOGISTICS AND COMMUNICATIONS
DIVISION

B-172707

The Honorable
The Secretary of Defense

Dear Mr. Secretary:

We have reviewed the adequacy of the Army's management and control of Government-furnished material used in producing ammunition for itself and other customers. We made our review at the Army Armament Command, Rock Island, Illinois, which procures hundreds of components from various sources and which provides them as Government-furnished material to Government-owned, contractor-operated plants for use in making end rounds of ammunition. ¹ _{Aug 1975}

Program and funding authorizations for production of various end rounds of ammunition are received by the Armament Command from higher echelons of the Army and from non-Army customers. To produce the authorized quantities of end rounds, the Armament Command should determine what components and quantities are needed. Next, the Armament Command should determine whether existing component inventories are adequate to meet production needs or whether additional components need to be procured.

A total Government-furnished material component inventory worth about \$550 million was on hand at the plants as of September 30, 1975. This inventory appeared to be disproportionately high since the Army's total program for ammunition production during fiscal year 1975 amounted to only about \$547 million, of which \$335 million was for components. Therefore we made our review to determine (1) how and over what period this inventory had accumulated and (2) what the Army planned to do with it. We did not, as part of our review, attempt to validate end-round production requirements received by the Armament Command.

We discussed these matters with officials of the Department of the Army, and their comments, together with details of our findings, are discussed in appendix I. ⁷ ₂₀

Clearly, some excess components resulted from decisions, beyond the Armament Command's control, to decrease end-round production requirements that were made after the

components had been procured or contracted for. End-round production requirements historically have fluctuated greatly and frequently. We have not, however, reviewed the many factors involved in these production cutbacks. According to Armament Command officials, the reason for the majority of the excess components' being on hand was that contracts were canceled after the hostilities in Southeast Asia ended.

CONCLUSIONS

The way the Army procures and manages ammunition components does not prevent funds' being invested in unplanned inventories. As a result, huge inventories of components beyond current end-item production needs have accumulated.

Moreover, the Army needs to improve its system for identifying, controlling, or reporting the planned uses of these vast inventories. If it does not, the Army will be in no position to make full use of these valuable assets.

The Army is stockpiling components as part of war reserves and is assuming the role of central manager for all DOD ammunition. The expanded role makes efficient management of component inventory even more vital because the impact of weaknesses will be felt throughout DOD.

Our review showed that:

--The Armament Command's inventory reporting system does not accurately show the amount of ammunition components excess to known production needs. As of September 30, 1975, the inventory system identified components worth \$27 million in this category. However, we identified at least \$149 million--perhaps as much as \$261 million--worth of components for which no firm DOD production use was planned and which were not likely to be used for DOD production through fiscal year 1981.

--Although some unneeded components have accumulated because of end-round production cutbacks beyond the Armament Command's control, the problem has been compounded by the lack of an adequate management system to insure that (1) on-hand inventory and due-in components are considered before like components are procured and (2) estimated procurement factors for scrap and reject are in line with production experience.

The major alternatives for productively using these ammunition components are:

- Future production for DOD's needs.
- Future production for use under the military assistance program or in foreign military sales.
- Storage of components rather than end rounds for war reserve purposes.

The Armament Command could not assure us that it had fully explored these alternatives.

RECOMMENDATIONS

We recommend that you require the Secretary of the Army to:

- Provide better visibility over ammunition component inventories. This action should (1) permit reduction of future DOD ammunition budget requests, (2) assist in stockpiling components rather than end rounds for war reserve purposes, and (3) help management identify alternative uses for those excess components.
- Improve the processes used in determining quantities of components to be procured by requiring that additive factors such as scrap and damage be regularly reviewed and adjusted when necessary.


As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House and Senate Committees on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are sending copies of this report to the Director, Office of Management and Budget; the Chairmen of the House and Senate Committees on Government Operations, Appropriations, and Armed Services; and the Secretary of the Army.

B-172707

We shall appreciate being informed of the actions taken on our recommendations. We wish to acknowledge the cooperation given our representatives during our review.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "F. J. Shafer".

F. J. Shafer
Director

SUMMARY OF GAO FINDINGS ON
AMMUNITION COMPONENT MANAGEMENT

INADEQUATE INVENTORY-REPORTING SYSTEM

The Armament Command's component inventory-reporting system does not reliably show components excess to current, firm end-round production requirements. An Armament Command regulation requires that the operating contractors at ammunition plants submit detailed monthly reports of component inventories on hand. The contractors must specify, with the appropriate codes, whether the components are planned for use in end-round production. In carrying out their responsibility for managing and coordinating end-round production, the production item managers should, we believe, review these reports when determining how many components to procure as Government-furnished material to meet end-round production requirements.

The total component inventory reported as of September 30, 1975, was worth about \$550 million. The contractors had categorized only about \$27 million of that inventory as being beyond production needs. The Armament Command had no supporting data available to verify this figure. In fact, to evaluate the accuracy of this figure, we had to develop data from various sources.

In reviewing 68 component items worth about \$312 million (57 percent of total value) in the September 1975 inventory, we found that quantities of 47 components worth about \$149 million were beyond firm end-round production requirements. Responsible Armament Command officials agreed with our analysis. (See app. II.) However, the contractors had identified only about \$16 million worth of this inventory as excess and had erroneously reported the remaining \$133 million worth as being needed for production.

Since we reviewed items worth only about 57 percent of the inventory value, the total value not needed for firm end-round production requirements probably exceeds \$149 million. The 68 items we reviewed did not represent a scientific sample, so we cannot accurately project this total. However, if the same pattern were to exist throughout the component inventory, the total value not needed for firm production needs could be as high as \$261 million.

HOW COMPONENTS ACCUMULATED

Other than the end-round cutbacks discussed in the letter, the primary cause that we could identify for accumulating unneeded ammunition components was the lack of an adequate management system and of written procedures at the Armament Command to insure that:

--Components on hand and due in were thoroughly considered before additional procurements were initiated.

--Procurement factors for scrap and reject were realistic in relation to production experience.

Armament Command personnel generally had not documented their actions; therefore they could not show us their basis for initiating component procurements nor give us their basis for the procurement factors in use.

To review Armament Command actions and decisions in these matters, we had to reconstruct past circumstances of procuring selected components by consulting many sources. The results showed that some past procurements had not been justified in view of existing circumstances and that some procurement factors in use were not according to actual scrap and reject rates. We believe that, without an adequate management system or written procedures, management will be ineffective.

Procurements initiated even though components were on hand or due in

Prudent management practices dictate that, before components are procured, inventory on hand and due in should be reviewed and compared against end-round production requirements. In fact, Army regulations express procurement philosophies under which the Armament Command would logically be expected to follow such a process. However, the Armament Command has not issued written instructions in sufficient detail to insure that this process is followed and that actions are documented. Because of this, production managers' methods for determining procurement quantities varied and actions were rarely documented--thereby increasing the possibility for procuring too many or too few components to meet authorized production requirements.

The Armament Command's predecessor organization, the Army Munitions Command, reportedly required ammunition production managers to prepare formal documents supporting component procurement decisions. Essential information concerning quantities on hand, due in, and needed for production was

systematically reviewed, therefore better projections of components needed for production were insured. (See app. III.) However, the Armament Command has not established a similar requirement, and decisions made since July 1973 have been documented sporadically.

The Armament Command was unable to give us clear and comprehensive documentation showing the basis for recent component procurements. The responsible production managers were able to recall and generally explain the reasons (for example, the opportunities to procure at lower prices or the anticipated continuation of production requirements) for some procurements. Some managers were unable to recall the basis for initiating multimillion-dollar procurements.

We analyzed the last procurements made during calendar years 1974 and 1975 of 17 of the 68 components selected for review, to determine whether the quantities procured were justified on the basis of relevant information available when the procurement was made. Relevant information included component inventory on hand, components due in under existing contracts, and firm end-round production for which the Armament Command had received program and funding approval. Identifying this information was extremely difficult due to the lack of a clear audit trail.

In nine instances the quantities procured appeared to be more than the circumstances dictated, resulting in accumulating unneeded components worth about \$3.5 million. Shown below are four examples of these procurements made in fiscal year 1975.

Quantity on hand and <u>due in</u>	<u>Production needs</u>	<u>Should have procured</u>	<u>Actual procurement</u>	<u>Overprocurement</u>	
				<u>Quantity</u>	<u>Amount</u>
------(000 omitted)-----					
21,821	25,334	3,513	3,850	337	\$104
5,558	6,088	530	682	152	114
15,837	19,729	3,892	4,331	439	234
720	915	195	219	24	121

In addition, responsible Armament Command officials were unable to explain why other unneeded components valued at about \$20 million were on hand as of September 30, 1975.

Armament Command officials told us that they planned to issue revised instructions to insure that the bases for future component procurements will be documented.

Procurement factors not in line
with production experience

In procuring components, the Armament Command determines quantities on the basis of "procurement factors" which consider production losses, bad components, etc. For example, only 1 good component may be needed in each end round but experience has shown that 3 out of every 100 will be rejected or scrapped during production. Therefore 103 percent of the required quantity will be procured. Conceptually, this appears sound.

Since millions of dollars worth of procurements are made each year on the basis of these factors, the Armament Command should systematically and thoroughly review these factors to insure that they are in line with production experience. Failure to do so can have serious adverse consequences. Since some components are procured in huge quantities, seemingly small errors in these factors can result in large accumulations or acute shortages of components over extended periods.

According to responsible officials, the Munitions Command had a formal system for regularly reviewing and adjusting procurement factors. The Armament Command has no such system. Although a committee has been assigned this review responsibility, Armament Command officials could not produce records of meetings or actions of that committee. Production managers have reportedly reviewed procurement factors only in isolated instances, but documentation to substantiate even these isolated reviews was generally not available.

Limited documentation available of reviews made during the Munitions Command era indicated that periodic adjustments to procurement factors had been necessary. We could not practicably attempt to measure the overall impact of erroneous procurement factors on the current accumulation of components.

We believe, however, that using unrealistic procurement factors could be a contributing cause of the current accumulation of ammunition components. Armament Command officials said that revised instructions would be issued to insure that procurement factors are regularly reviewed and adjusted when necessary.

WHAT TO DO WITH AVAILABLE COMPONENTS

For various reasons, the Army now faces the challenge of insuring that the best possible use is made of at least \$149 million worth of available, but apparently unneeded, ammunition components. Because of the magnitude of this inventory, we believe that DOD must mount a special effort

to deal with it. Moreover, as stated earlier, the reporting system for component inventories should be modified to provide ongoing visibility over these inventories to responsible officials.

The monthly component inventory reports are not widely distributed within the Armament Command, the Army, or DOD; they are made available only to Armament Command production management personnel. We believe better decisions on ammunition production should result if existing component inventories are taken into account before production decisions are made. Therefore we believe any DOD office making decisions concerning future production or use of ammunition and rounds for whatever purpose--within DOD or for the military assistance program (MAP) or the foreign military sales (FMS)--should be required to consider the availability of these ammunition components. Armament Command officials agreed that informing customers of component inventories on a select basis could help avoid financial losses on inventory excess to Army needs.

Future DOD production

In preparing its budget request for ammunition production, the Armament Command uses a format that permits a reduction if components are available. In a limited review, however, the Army Audit Agency found that the fiscal year 1975 budget should have been reduced by at least \$16 million because of available components. The Army Audit Agency concluded in a June 1975 report that it was likely that many other reductions had not been properly made.

The 47 components for which we found quantities on hand beyond firm production requirements are used in the production of at least 19 basic end rounds. Of these, only four were planned for Army production during fiscal year 1977.

The Armament Command could not produce clear and systematic documentation showing that on-hand components had been considered in preparing the fiscal year 1977 budget requests. We reconstructed the circumstances by consulting records and holding detailed discussions.

Using this process, we determined that reductions of about \$400,000 should have been, but were not, made in budget requests for two of the four end rounds planned for fiscal year 1977 production. For the other two end rounds, budget requests had been reduced by about \$11 million to account for available components that we reviewed. However, these reductions had apparently been made because of widespread knowledge of the longtime availability of specific components,

not as a result of a formal process to systematically review all available components. Armament Command officials told us that they would make thorough reviews to insure that all available ammunition components are considered in future budget submissions.

The Army's 5-year procurement plan indicated that only 8 of the 19 basic end rounds are planned for production through fiscal year 1981. The planned production of these end rounds may involve use of 10 of the components listed in appendix II. The other 37 items, valued at about \$121 million, will apparently not be needed by the Army during the next 5 years.

In addition, the Army has a list of unfunded ammunition requirements for the same 5-year period, which it periodically updates. Ammunition valued at about \$716.7 million appeared on the unfunded requirements list for fiscal year 1977. We believe the availability of ammunition components should also be reviewed against this unfunded requirements list for scheduling production where it is economically feasible.

Moreover, in November 1975 the Army was assigned single-management responsibility for conventional ammunition on a DOD-wide basis. This action followed an earlier report, 1/ in which we suggested that management of ammunition could be improved if it were centralized. The 47 identified components are used in producing at least 3 basic end rounds used by other military services. The single-management concept should provide additional ways to productively use the accumulated components.

Stockpiling components for war reserves

In another report, 2/ we concluded that economies should result if some war reserves were stocked in components rather than in end rounds. DOD agreed and began following the concept. At the time of our review, the Armament Command had made only a limited effort in this regard, initially studying only three components.

1/Report to the Congress, "Effective Control Could Improve DOD's Ammunition Logistics" (B-176139, Dec. 6, 1973).

2/Report to the House Committee on Appropriations, "Mobilization Planning for Ammunition in the Department of Defense" (B-172707, Oct. 12, 1974, SECRET).

We believe that the Army will have to make a much more aggressive effort to translate this concept into a reality. The magnitude of the inventory of available components should provide an added impetus for the Army to proceed with this program. We will continue to monitor the progress made.

Military assistance program
and foreign military sales

The projected value of ammunition to be provided to other countries under MAP grant aid during fiscal year 1976 is about \$41.3 million. In addition, FMS of ammunition managed by the Armament Command--more difficult to accurately project--are expected to exceed \$755.5 million. Of the 47 components listed in appendix II, 30 are used in end rounds likely to be provided to MAP or FMS recipient countries during fiscal year 1976 and thereafter.

In some cases, the Army's inventory of these end rounds will be large enough to permit shipment without new production. Therefore we did not attempt to determine how many of the available components would be needed to produce end rounds to meet MAP or FMS needs. Nevertheless, the possibility of using many of the available components to produce end rounds for MAP or FMS exists. However, to use the existing component inventory effectively, the appropriate decisionmakers must be aware of its size and composition.

In using components to produce end rounds for MAP or FMS needs, the Army will have to insure that the MAP appropriation or the FMS customer is charged for the components used.

BEST DOCUMENT AVAILABLE

COMPONENTS ON HAND BEYOND FIRM END-ROUND PRODUCTION REQUIREMENTS

End round and component (note a)	Year of last procurement	September 30, 1975 inventory		Firm production requirements	Beyond firm requirements		Quantity needed to meet Army's 5-year procurement plan (note b)	Other anticipated users of end rounds during next 5 years
		Quantity	Value		Quantity	Value		
(000 omitted)								
40-mm:								
Case, cartridge, M118	1975	11,671	\$ 3,618	-	11,671	\$ 3,618	1,392	FMS, MAP, Air Force, Marine Corps
Fuze, point detonating, 551	1975	326	329	-	326	329	1,370	FMS, MAP, Marine Corps
Cup and Skirt Assembly	1974	12,070	5,927	-	12,070	5,927	-	Marine Corps
Cup, Powder charge	1974	16,908	51	-	16,908	51	1,392	FMS, MAP, Air Force, Marine Corps
Liner Assembly	1974	8,290	1,169	-	8,290	1,169	-	Marine Corps
Fuze, point Initiating base detonating, M550 Less/Spitback	1975	6,394	9,769	-	6,394	9,769	-	Marine Corps
60-mm:								
Head Assembly, T336E7	1974	3,963	7,372	1,283	2,680	4,986	-	FMS, MAP
Cartridge, ignition, M5A2	1975	4,126	355	1,283	2,843	244	-	FMS, MAP
Fin Assembly, M2	1975	4,397	1,961	1,313	3,084	1,376	-	FMS, MAP
Detonator, M44E1	1975	2,730	317	1,319	1,410	164	-	FMS, MAP
155-mm:								
Projectile, metal parts, M483	1973	48	3,809	-	48	3,809	2,355	None
Projectile, white phosphorous, M110	1968	69	2,042	-	69	2,042	157	FMS, MAP
81-mm:								
Fin Assembly, M170	1974	2,039	2,643	630	1,410	1,827	-	FMS, MAP
Detonator, M63	1975	1,176	130	561	615	68	-	FMS, MAP
Detonator, M80	1975	1,356	180	566	790	105	-	FMS, MAP
Projectile Assembly, High Explosive, M374A2	1975	2,180	6,753	526	1,654	5,125	-	FMS, MAP
Motor closure, M54,E1	1968	570	798	176	394	551	-	Undetermined
Launcher, Rocket	1974	652	9,086	173	479	6,674	-	Undetermined
105-mm:								
Propellant, M1 SP M67	1975	7,376	5,399	457	6,919	5,065	-	FMS, MAP, Marine Corps
Propellant, M1 MP M67	1975	29,052	17,202	1,567	27,485	15,859	-	FMS, MAP, Marine Corps
Projectile body, M314A3	1974	129	1,132	40	89	783	-	FMS, MAP, Marine Corps
Projectile body, M84E1, Smoke	1969	147	1,830	-	147	1,830	-	FMS, MAP, Marine Corps
M18A1 mike:								
Band, M7	1975	458	792	-	458	792	-	FMS, MAP
Cap, blasting, Electric M4	1975	222	1,151	-	222	1,151	-	FMS, MAP
M67 grenade:								
Fuze, M213	1975	1,389	747	-	1,389	747	-	FMS, MAP
57-mm:								
Case, cartridge M30A1	1972	256	683	158	98	261	-	FMS, MAP
Projectile, high explosive, M306A1	1972	586	1,241	134	451	957	-	FMS, MAP

APPENDIX II

APPENDIX II

BEST DOCUMENT AVAILABLE

APPENDIX II

End round and component (note a)	Year of last procurement	September 30, 1975 inventory		Firm production requirements	Beyond firm requirements		Quantity needed to meet Army's 5-year procurement plan (note b)	Other anticipated users of end rounds during next 5 years
		Quantity	Value		Quantity	Value		
(000 omitted)								
20-mm:								
Propellant, WC, 870	1975	2,277	2,248	1,034	1,242	1,071	1,268	FMS, MAP
Shell, high explosive incendiary, M56A3	(c)	4,522	1,085	2,531	1,992	478	-	None
20-mm, 7.62-mm and .50 caliber:								
Box, Ammunition packing, M548	(c)	561	4,170	180	382	2,841	141	FMS, MAP
5.56-mm:								
Propellant, WC, 844	1974	6,068	5,189	1,854	4,214	3,388	-	FMS, MAP, Air Force, Navy, Marine Corps
Bandoleer, M3	(c)	14,521	6,244	3,294	11,226	4,827	-	FMS, MAP, Air Force, Navy, Marine Corps
2.75 rocket:								
Fuze, XM429, LD	1970	154	2,403	-	154	2,403	(d)	Undetermined
Grain, M43	1975	481	6,343	163	318	4,191	(d)	Undetermined
MK3A2 hand grenade:								
Fuze M206A2	1975	646	278	-	646	278	-	FMS, MAP
90-mm:								
Projectile, M371	1968	39	392	-	39	392	127	FMS, MAP
152-mm:								
Projectile, M409	1966	157	11,622	-	157	11,622	127	None
Charge, propelling	1975	423	2,629	98	325	2,018	790	None
Propelling charges:								
Propellant, 8 inch, M1 green bag	1971	1,446	1,009	-	1,446	1,009	-	FMS, MAP
Propellant, 155-mm, M3A1 green bag	1975	4,827	3,273	-	4,827	3,273	-	FMS, MAP
Propellant, 155-mm, M4A2 white bag	1975	27,597	15,703	-	27,597	15,703	-	FMS, MAP
Propellant, 8 inch, M2 white bag	1972	9,936	5,915	205	9,731	5,693	-	None
Cluster Bomb Unit - 7:								
Housing Assembly	1966	9,266	11,898	-	9,266	11,898	-	None
Washer	1966	7,881	87	-	7,881	87	-	None
Shell Tube Assembly	1966	8,087	1,019	-	8,087	1,019	-	None
Shell, lower	1966	8,108	308	-	8,108	308	-	None
Adaptors	1966	7,782	1,097	-	7,782	1,097	-	None
Total						<u>\$151,012</u>		

a/Some configurations of basic end rounds use different components than others. Also, users of the same end round may differ as to its configuration.

b/As of October 1, 1975.

c/Not determined.

d/Undetermined.

APPENDIX II

FORM FORMERLY USED BY THE MUNITIONS COMMAND

TO REVIEW PROCUREMENT FACTORS

DOCUMENT AVAILABLE

REQUIREMENT VS AVAILABILITY
(SUMMARY & ANALYSIS)

COMPONENT _____

SUMMARY

- a. Total end item quantity ordered from _____ thru _____.
- b. Total end item quantity accepted thru above period.
- c. Balance of end items to be delivered (a-b).
- d. Total qty of component procured to satisfy total reqmts.
(Include stock on hand at beginning of period covered).
- e. Total quantity of component currently available.
- f. Total quantity of components consumed (d-e).

ANALYSIS

- g. Avg factor used for procurement thru above period (d+a).
- h. Current std factor auth.
- i. Factor experienced thru above period (f+b).
- j. Component factor currently avail (e+c).

CURRENT STATUS

- k. Bal of end items to be delivered (c).
- l. Factor recommended for current use.
(If other than (i) above, furnish explanation)
- m. Components required to completion (kxl).
- n. Total quantity of components remaining as avail (e).
- o. Excess or deficit.

RECOMMENDATIONS

Commodity Section Chief

Analysis performed by _____

DATE _____

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