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DEFENSE INVENTORY

Growth in Air Force and Navy Unrequired Aircraft Parts

GAO

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The Honorable John Glenn
Chairman, Committee on
Governmental Affairs
United States Senate

The Honorable Jim Sasser
Chairman, Committee on
the Budget
United States Senate

This report responds to your Committees' requests that we study defense secondary inventories. We previously provided you with an overview of inventory growth and are completing our response with two reports on areas of largest growth. The other report deals with ship and submarine parts growth, while this report discusses the causes of unrequired aircraft parts and addresses ways in which such stocks can be minimized.

As arranged with your offices, we plan no further distribution of this report until 30 days from its issue date, unless you release its contents earlier. At that time, we will send copies to other interested committees and Members of Congress; the Secretaries of Defense, Navy, and Air Force; and the Director of the Office of Management and Budget. We will also make copies available to other parties upon request.

This report was prepared under the direction of Donna M. Heivilin, Director, Logistics Issues (202) 275-8412. Other major contributors are listed in appendix IV.

Frank C. Conahan
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Executive Summary

Purpose

The Department of Defense's (DOD) inventory of aircraft parts grew from $17.3 billion in 1980 to $53.6 billion in 1988. The Chairmen, Senate Committees on the Budget and on Governmental Affairs, asked GAO to analyze growth for Air Force and Navy stocks in unrequired inventory that would not increase military capability.

Specifically, GAO identified (1) the current and past causes for growth in unrequired stock, (2) DOD actions that could minimize growth in unrequired stock in the future, and (3) growth in required stock inventories that are not needed for wartime or current-year operations.

Background

Principal items include such items as aircraft and ships, and secondary items include such minor end items as compressors and turbines and repair parts. DOD categorizes its secondary inventories into six classifications. Two represent current requirements, that is, required stocks held to meet war reserve and peacetime operating requirements over a 24-month period. The remaining four represent unrequired inventory—stocks that are not needed to meet current requirements but are held, in most cases, to satisfy potential future requirements and possible contingencies.

Results in Brief

The inventory of unrequired aircraft parts has increased at a faster rate than required stocks. Among the major causes of unrequired inventory growth for aircraft items, GAO found procurement management practices contributed to growth in unrequired stock. Moreover, some DOD and Air Force initiatives to improve their reports could reduce visibility over unrequired stock and, consequently, mask the need for management attention. Furthermore, required stocks held to meet other than current-year requirements have grown significantly and are more likely to become obsolete or experience declining demand before they are needed.

The reduced oversight and growth in years of required stock on hand suggest that unrequired stocks may continue to grow. Holding more years of stock results in larger required inventories without a stated policy to increase requirements.

Principal Findings

Direct Causes for Unrequired Stock

GAO's evaluation of the growth in the unrequired inventories of 51 judgmentally selected secondary aircraft items showed that the most common causes for the growth were overestimated use rates and modifications of aircraft and equipment. Other contributing factors included faster than expected phase-out of older aircraft and decreasing war reserve and safety level requirements. Some of these factors have been the subject of prior reports by GAO and DOD.

Procurement Practices Contribute to Unrequired Stock

GAO examined 36 items which had recent contracts for replenishment buys where on-order quantities were later identified for potential termination because they were excess to requirements. Air Force guidance tended to discourage terminations. Also, the lack of an effective process to identify and act on potential terminations at one of the Navy's inventory control points also impeded terminations.

For five items the Air Force procured and received the materials sooner than required. This practice results in premature inventory investment and unnecessary holding costs and increased risks that material might become obsolete before it is used.

The Navy procured three consumable items in excess of requirements using DOD's technique for determining the purchase quantity that will result in the lowest total cost. GAO has previously recommended that the Navy stop its practice of buying more than that quantity without specific justification because it contributes to the Navy's unrequired stock. DOD, however, disagreed.

Reporting Changes Impede Efforts to Reduce Unrequired Stock

Some Air Force and DOD inventory reporting initiatives may aggravate problems with unrequired stocks. The Air Force temporarily authorized adding items to stock requirements and therefore on-order material that should have been reported as unneeded was not reported. It is also considering adding an additional year of requirements to its system for determining requirements. Similarly, DOD proposed adding a year of requirements to its reporting system, and also requirements for purchases to obtain discounts or ensure parts for the life of a system. According to DOD and Air Force representatives, the actions are intended

to recognize that obtaining unrequired assets can be in the government's best interest.

Identifying the reasons for buying unrequired stocks can help prevent unnecessary growth. However, the above changes to reporting criteria would mask the extent of growth. They could also reduce the quantities of unneeded orders eligible for termination.

Increases in Air Force Required Stock Could Cause More Unrequired Stock

The growth in the Air Force's required stock held to meet peacetime requirements beyond the current year may result in continued high levels of unrequired stocks. High levels increase the risk of reduced demand or obsolescence because requirements may decline when end items are phased out or are modified. The inventory available to satisfy requirements beyond the current year has grown more than other requirements—from $1.3 billion in 1980 to $6.6 billion in 1988. One-third of the Air Force's required inventory is excess to wartime or current year operations.

Many of the problems contributing to unrequired inventories have also contributed to inventory growth in required stocks beyond current-year needs. Such items could become unrequired inventory.

Recommendations

GAO makes six recommendations to the Secretary of Defense, that will

- improve procurement practices to minimize buying items early and in greater quantities than required and encourage terminating more orders for unneeded items and
- ensure more accurate reporting of required versus unrequired items and provide better visibility of unneeded items.

Agency Comments and GAO Evaluation

DOD generally agreed with the thrust of GAO's draft report, and described its current efforts to control inventory growth. It agreed with four of GAO's six recommendations. After analyzing the agency's comments, GAO still believes all of its recommendations are valid.

DOD did not agree with GAO's recommendation that the Air Force stop initiating purchase requests earlier than required, and stated that the practice has no effect on the requested delivery date. However, GAO found that 95 percent of sample deliveries were delivered, on average, over 1 year early.

DOD also did not agree with GAO's recommendation that the Air Force forego efforts to add a year to its requirements, and stated that it should not have to terminate on-order items if a future need is forecast. GAO agrees that needs forecasts are useful, but believes that premature expenditures are unnecessary and increase the risk of unrequired inventory.

Contents

Abbreviations

AFLC	Air Force Logistics Command
ASO	Aviation Supply Office
DOD	Department of Defense
GAO	General Accounting Office

Introduction

The Department of Defense (DOD) classifies its material inventories as principal items and secondary items. Principal items include aircraft, tanks, and ships and secondary inventory items include minor end items, such as compressors and turbines, and repair parts. The value of DOD's secondary inventory grew from $43 billion in 1980 to $103 billion in 1988, an increase of $60 billion. Over half of that growth was in aircraft parts, which grew from $17.3 billion in 1980 to $53.6 billion in 1988, an increase of $36.3 billion. Table 1.1 shows the dollar change in the aircraft parts inventory between 1980 and 1988.

Table 1.1: DOD's Aircraft Parts Inventory (1980-1988)

Dollars in billions

Year	Inventory
1980	$17.3
1981	19.3
1982	21.8
1983	24.2
1984	29.4
1985	46.5
1986	47.6
1987	47.9
1988	53.6

Although more than half of DOD's 1988 aircraft parts inventory is held by the Air Force, the Army and Navy's aircraft parts inventory grew at a faster rate between 1980 and 1988, as shown in table 1.2.

Table 1.2: Aircraft Parts Inventory by Service (1980-1988)

Dollars in billions

	1980	1988	Increase	Growth (percent)
Army	$1.7	$5.7	$4.0	235
Navy	4.5	18.5	14.0	311
Air Force	11.0	29.4	18.4	167
Total	**$17.3[a]**	**$53.6**	**$36.3[a]**	**210**

[a]Total does not add due to rounding.

We did not include the Army in our review because it has a comparatively small inventory of aircraft parts. Consequently, our review of aircraft parts management and inventory reporting covers only Air Force and Navy operations.

Management and Reporting of Aircraft Parts Inventory

The National Security Act of 1947 requires the Secretary of Defense to report annually to the President and the Congress on DOD's inventory, which includes principal and secondary items. To comply with the act, DOD requires the services to report their inventories by standard DOD materiel categories, including aircraft parts.

The Air Force and Navy differ in what items they report as aircraft parts and how they fund the items. For example, the Air Force's reported inventory includes only reparable items—items that are repaired, rather than discarded. The Air Force's consumable aircraft parts (nonrepairable items that are discarded when broken) are reported in the Construction, Industrial, and General Supplies category. The Navy's aircraft parts inventory includes both reparable and consumable items. Reparable items represented about 76 percent of the Navy's 1987 aircraft parts inventory value, compared to about 24 percent for consumable items.

Funding of aircraft parts also differs between the two services. The Air Force funds aircraft parts through its procurement appropriation and issues parts to its activities without reimbursing the supply activity. The Navy's aircraft parts inventory is mostly funded through stock fund accounts, which require Navy activities to reimburse the wholesale supply activity for parts as they are issued.

Management of Aircraft Parts

The Air Force Logistics Command (AFLC) provides logistics support and services through its five air logistics centers. The centers are referred to as inventory control points and as such are responsible for the worldwide management of items and weapon systems support. They determine requirements and provide central procurement and storage of wholesale-level inventories of Air Force-managed items, including reparable aircraft parts. The centers use a standard automated system, known as the D041 system, to forecast the types and quantities of reparable parts that will be needed. On a quarterly basis, the system calculates when items should be procured based on parts on hand and on order, amount and timing of projected use (demand), and procurement lead times. The system also recommends terminating quantities of on-order materials that are excess to requirements.

The Naval Supply Systems Command administers the Navy's supply system and provides management polices and procedures to its inventory control points. The Aviation Supply Office (ASO) is one of the two Navy inventory control points and is the one responsible for overall

management of Navy aircraft parts. ASO uses a special program to forecast anticipated demand and program-based requirements. Assets are then compared with requirements for individual items to determine if procurement or termination of assets on order is required.

Reporting Aircraft Parts Inventory

AFLC prepares the Air Force's annual inventory report using inventory data from its five air logistics centers. Similarly, ASO is responsible for reporting the Navy's aircraft parts inventory.

The Navy and the Air Force prepare their annual inventory reports based on data from the Central Secondary Item Stratification report. This report allocates all available assets to various requirements to arrive at a net requirement deficit, which forms the basis for budget projections. The report also classifies inventory by the requirement or retention criteria for which it is held. The Air Force classifies its inventory four times a year, and bases its annual inventory report on the March stratification report. The Navy classifies its inventory in March and September and bases its annual inventory report on the September stratification report. However, the actual inventory values reported by the services may differ from values in the stratification reports because of adjustments made during preparation of the annual inventory report.

DOD divides its inventory into six classifications. Two of the classifications represent required stocks and four represent unrequired stocks. These required stocks are needed for current operations and wartime use. The approved force acquisition objective represents 24 months of operating needs and war reserves and accounts for almost all required stock. The 24-month period includes the rest of the current year, the following budget year and, if necessary, additional months to complete the 24-month period. Unrequired stock is excess to current acquisition requirements and includes assets held to satisfy potential future requirements and possible contingencies. Appendix I provides a detailed description of the six categories.

DOD and service inventory reports identify items that need to be purchased and help measure how well managers provide the right items and quantities. Growth in unrequired stock classifications warns inventory managers of areas where changes in requirements or unnecessary purchases have resulted in undesired inventory increases.

The Congress is concerned about growth in unrequired inventories, because it indicates that funds are not being spent on the right items or

the right quantities. By minimizing such inventories, DOD can reduce its expenditures for secondary items or use the funds to meet other needs.

In July 1988, we issued a report on our macro-analysis of the inventory growth.[1] We reported that DOD's secondary item inventory increased about $51 billion between 1980 and 1987. Required stocks grew about $27 billion, while stocks in excess of requirements grew about $19 billion. About $5 billion of the inventory growth was unstratified.[2] We found that aircraft parts represented about $31 billion of the $51 billion in inventory growth between 1980 and 1987 and about $9 billion of the $19 billion increase in stocks excess to requirements.

Objectives, Scope, and Methodology

The Chairmen, Senate Committees on the Budget and on Governmental Affairs, requested us to study the growth in DOD's secondary inventories. They asked that our work include a macro-analysis of the growth and aspects of growth not related to increases in military capability.

We reviewed the growth in aircraft parts inventories in the Air Force and Navy not related to increases in military capability. We identified (1) current and past causes for growth in unrequired stock, (2) DOD actions that could minimize growth in unrequired stock in the future, and (3) growth in required stock inventories that are not needed for wartime or current-year operations. Although the Army also centrally manages inventories of aircraft parts, those inventories are relatively small. Therefore, we did not include Army inventories in our review.

We performed our work at the Office of the Assistant Secretary of Defense (Production and Logistics); Navy and Air Force headquarters; the Logistics Management Institute, Bethesda, Maryland; and the following commands and field locations:

- Navy Aviation Supply Office, Philadelphia, Pennsylvania;
- Air Force Logistics Command, Wright-Patterson Air Force Base, Ohio;
- Warner-Robins Air Logistics Center, Robins Air Force Base, Georgia;
- Sacramento Air Logistics Center, McClellan Air Force Base, California;
- Oklahoma City Air Logistics Center, Tinker Air Force Base, Oklahoma;
- San Antonio Air Logistics Center, Kelly Air Force Base, Texas; and
- Ogden Air Logistics Center, Hill Air Force Base, Utah.

[1] Defense Inventory: Growth in Secondary Items (GAO/NSIAD-88-189BR, July 19, 1988).

[2] According to DOD, unstratified stocks represent items in transit.

To develop trend information, we analyzed DOD aircraft parts inventory data for 1980 through 1987 from the supply system inventory reports. All data in the reports are as of September 30 of each year.

To develop information on the growth in various categories of required and unrequired stock, we analyzed Air Force and Navy central secondary item stratification reports used to prepare their respective annual inventory reports. For the Navy we used September 1980 and 1987 reports, and for the Air Force we used March 1980 and 1988 reports. DOD recognizes that stratification reports have inaccuracies because the information is not 100 percent validated prior to preparing the annual inventory report. For example, the Air Force's 1986 stratification report contained a $3.3-billion overstatement that was identified by the Air Force after DOD issued its annual inventory report. We used the stratification reports in spite of the recurring errors because they were the only documents available in sufficient detail to analyze inventory growth in the various categories of stock. In addition, we would subsequently detect errors involving our selected items by examining supporting documents during our review.

To analyze the inventory of unrequired stock and select items for review, we obtained Navy and Air Force computer tapes containing 97 percent of the Navy's and 93 percent of the Air Force's inventory of unrequired aircraft parts.[3] The data represented the Air Force and Navy inventories as of September 30, 1987. We obtained Air Force procurement history tapes from each of the five air logistics centers to identify items in unrequired stock that had been recently purchased. The format of the data prevented us from using the Navy's procurement history tape to identify recently purchased items, so we selected from Navy items that were still on order.

To determine the causes of unrequired stock, we judgmentally selected a sample of 40 Air Force and 25 Navy items that had recently been procured or were on order and had large values of unrequired stock for detailed review. The Air Force tape contained a universe of 42,687 items with national stock numbers that had unrequired stock valued at $5.9 billion. We identified 1,357 items that had been purchased in fiscal years 1986 and 1987, which accounted for unrequired stock valued at $184.7

[3]We did not include some smaller groups of items because they were separately managed. For example, Air Force wartime consumable items represented about 3 percent of Air Force aircraft parts and are managed by a separate automated system. According to AFLC and San Antonio Air Logistics Center officials, wartime consumables are a relatively static inventory of items that experience little peacetime demand.

million. We identified 40 of the items with the largest dollar investment in unrequired stock at the five air logistics centers. These 40 items had unrequired stock valued at $91.6 million, or about 50 percent of recently acquired items.

From 107,470 Navy items with unrequired stock valued at $5.1 billion, 6,715 items had unrequired stock on hand valued at $227.5 million and, at the same time, had quantities due in from purchase contracts. The 25 largest items had unrequired stock valued at $46.3 million, or about 20 percent of the items on order. A description of selected Air Force and Navy items is provided in appendix II.

We analyzed requirements computation documents and interviewed air logistics center and ASO requirements analysts and item management personnel. We were usually able to determine what change in requirements caused items to be reported in unrequired stock. In most cases, the lack of historical documents prevented us from reconstructing the decision-making process to determine if the item managers should have known that requirements were overstated when the items were last purchased. Many of the problems that we identified as causing growth in unrequired inventories also contribute to overstating required inventories that could eventually end up as unrequired inventories. We only evaluated the causes for growth in unrequired inventories and did not determine their impact on required inventories.

To identify previously reported logistics problems related to the growth in unrequired stocks, we reviewed the findings and recommendations in prior GAO and DOD audit reports that related to the general problem areas identified in our review of selected items. We also interviewed officials at the headquarters, major command, and logistic item management levels.

Because much of the data used in the services' requirements computation systems is from other data systems, we did not attempt to verify the accuracy of all the data. However, we did determine the basis for the reported unrequired stock on individual items we examined, compared this with other available information for consistency, and verified data accuracy with the item managers.

We obtained official comments from DOD on the draft report. We incorporated them throughout the report as appropriate, and reprinted them in appendix III.

We conducted our review from January 1988 through April 1989 in accordance with generally accepted government auditing standards.

Inventory of Unrequired Aircraft Parts Has Shown the Most Rapid Growth

The largest rate of growth in the aircraft parts inventory has been in unrequired stocks. We identified 6 major reasons why most of the 65 items we reviewed became unrequired. Overestimated customer use/demand rates and modification of existing aircraft and equipment were the most common reasons.

Between 1980 and 1988, the Air Force's inventory of aircraft parts increased by $18.8 billion, from $9.2 billion to $28 billion (204 percent). The Navy's inventory of aircraft parts increased by $8.3 billion, from $4.6 billion, in 1980 to $12.9 billion in 1987 (181 percent). As shown in table 2.1, the increase for Air Force and Navy required stock had the largest dollar increase, but unrequired stock had the greatest percentage increase.

Table 2.1: Increase in Air Force and Navy Inventory of Aircraft Parts

Dollars in millions

	Increase in Air Force inventory, March 1980 to 1988[a]		Increase in Navy inventory, Sept. 1980 to 1987[a]	
Inventory classification[b]	**Amount**	**Percent**	**Amount**	**Percent**
Approved force acquisition objective	$12,886	179	$4,601	153
Approved force retention	[c]	[c]	90	105
Total required stock	$12,886	179	$4,691	151
Economic retention	$2,850	740	$378	141
Contingency retention	2,847	181	3,742	565
Potential excess	210	429	(517)	(95)
Total unrequired stock	$5,907	295	$3,603	244
Total	**$18,793**	**204**	**$8,294**	**181**

[a]Stratification values may not agree with DOD's reported inventory because the services made adjustments in preparing their annual inventory reports.

[b]See appendix I for definitions.

[c]The Air Force does not use the approved force retention category in its inventory stratification.

DOD's reported inventory includes many items that need repair. Stratification reports for 1987 showed that over half the Air Force and Navy unrequired aircraft parts needed repair.

Some of the inventory management factors causing unrequired stocks have been previously reported by us and the audit organizations of the military services. Although actions have been taken on some of these problems, our tests of the largest line items with unrequired inventory

show that these factors continue to create much of the unrequired inventory.

Reasons for the Growth in Unrequired Stock

We reviewed 65 items (40 Air Force and 25 Navy) to determine why stock had become unrequired. We found that 10 items were erroneously reported and, in fact, did not have unrequired stock. Because of a lack of documentation, we could not determine why four other items had unrequired stock. Table 2.2 shows the 6 major reasons why the remaining 51 items had unrequired stock.

Table 2.2: Major Reasons for Unrequired Stock of 51 Selected Items

	Items with unrequired stock			
Reason	**Air Force**	**Navy**	**Total**	**Percent**
Use rates overestimated	9	7	16	31
Modifications reduced demand	3	7	10	20
Items became repairable	5	3	8	16
Aircraft phased out	4	4	8	16
War reserves or safety levels reduced	5	0	5	10
Reliability improved	3	1	4	8
Total	**29**	**22**	**51**	**101[a]**

[a]Total is more than 100 due to rounding.

Four of the six reasons related to those identified in earlier reports. We did not find prior audits that identified unrequired stock caused by consumable items that became repairable, or items that experienced improved reliability.

In our sample, we usually identified what caused quantities of items to be reclassified from required to unrequired stock. However, for most items, we were not able to determine if requirements were overstated when the items were last purchased because requirement computations that justified the last purchases were not available.

The following sections describe each of the above problem areas and prior related audits. The prior audits describe the kinds of problems encountered and actions taken in the past. Except where specifically noted, the descriptions of prior findings are not intended to represent the circumstances existing now.

Use Rates Overestimated

Unrequired stock for 16 of the 51 items, or 31 percent, resulted because estimated use rates decreased. The Air Force's and Navy's automated systems use 2 years of historical use data to develop demand forecasts for items in the supply system considering such factors as failure rate and field versus depot repair. However, new items entering the supply system or items undergoing engineering or design changes do not have past use data that represent future requirements. Therefore, demand rates are based on information from maintenance, contractor, and user personnel or the demand rates of similar items. If demand rates are wrong, requirements will be overstated or understated.

An example of a new item in unrequired stock is a compressor rotor blade for the F-404 engine, which powers the F/A-18 aircraft. The blade was last purchased in July 1985, when the Navy bought 4,615 blades. ASO based this procurement on an initial estimated replacement rate of 35 percent. However, the current historical replacement rate is about 4 percent. As a result, 6,464 blades valued at $1.3 million were in unrequired stock as of September 30, 1987.

A case assembly for the F-100 engine, which powers the F-15 and F-16 aircraft, was an example of an older item in unrequired stock. In 1985, the San Antonio depot maintenance activity did not meet overhaul production goals for the F-100 engine. Because a parts shortage contributed to the problem, air logistics center item management and depot maintenance personnel revised spare part requirements for the engine. The equipment specialist revised requirements for the case assembly using an estimated 20-percent condemnation rate in the requirements computation.[1] In fiscal years 1986 through 1987, the Center awarded contracts to buy 629 case assemblies for $4.1 million based on that estimate. By September 1987, requirements for the case were again being automatically computed based on actual historical data and the condemnation rate dropped to 1 percent. As a result, 665 case assemblies valued at $4.6 million were in unrequired stock. Documents were not available to determine whether the estimated 20 percent condemnation rate used in 1985 was justified at the time.

Prior Reports Dealing With Related Issues

In February 1986, the Air Force Audit Agency reported that the Air Force had based 13 percent of its requirements for aircraft parts on estimated use rates.[2] In a judgmental sample of 60 items using estimated

[1]The condemnation rate is the proportion of items needing repair that are uneconomical to repair.

[2]Review of Selected Estimated Usage Rates for Recoverable Items (Air Force Audit Agency, Project No. 5126117, Feb. 13, 1986).

rates, the Audit Agency found that 23 items (38 percent) had invalid use rates that overstated requirements by at least $44.8 million. For example, had the Air Force relied on actual use rates for 10 items instead of contractor estimates (5 years of actual use history was available) requirements could have been reduced by $34.1 million. The Audit Agency recommended that AFLC develop a management product to identify items with estimated use rates that had 2 years or more of historical use data. It also recommended that supervisors and review teams use the product to identify items most likely to have misstated requirements. In response, AFLC emphasized to its air logistics centers the need to review active items that used estimated factors when 2 years or more historical data were available, and agreed to provide a product that identified such items for the air logistics centers on request.

In April 1985, the Air Force Audit Agency reported that AFLC's initial and follow-on requirements for spare parts were misstated or provided inconsistent levels of supply support for the F-16C/D aircraft.[3] Initial spare part requirements were overestimated by $4.4 million for seven of nine items. Further, 15 of 18 items had requirements overstated by $85.9 million because estimated failure rates did not consider expected reliability improvements. The Audit Agency recommended the use of estimated failure rates that correspond to reliability growth rate charts. AFLC concurred and agreed to include the requirement in revisions to its regulations.

Modifications Resulted in Declining Demand or Obsolescence

Unrequired stock for 10 of the 51 items, or 20 percent, resulted from modifications of aircraft or equipment that reduced demand or caused complete obsolescence. Modification programs to correct deficiencies and improve capabilities of weapon systems and equipment involve replacing items managed by the services. During a modification program, requirements for old or replaced items decrease while requirements for new installed parts increase.

To illustrate, 1 of the 10 items was a duct segment for the F-100 engine. In November 1985, the San Antonio Air Logistics Center purchased 73,000 duct segments for $8 million in the second year of a multiyear contract. However, as of September 1987, 41,365 duct segments valued at $4.7 million were in unrequired stock. According to the equipment specialist, the duct segment is being replaced by a new item as part of the "improved life core" engine modification program.

[3]Spares Support for the F-16 C/D Aircraft (Air Force Audit Agency, Project No. 4126121, Apr. 4, 1985).

Another example is a power supply that had 48 unrequired assets on hand worth $1.5 million as of September 30, 1987. According to ASO officials, this item is in unrequired stock because the electronic warfare test set it supports is being replaced with a more modern test set.

Prior Reports Dealing With Related Issues

In October 1982, we reported[4] that Air Force managers were not routinely advised of modification programs that reduced or eliminated demand for their items, and that managers spent millions of dollars purchasing and repairing unneeded items. We recommended increased emphasis to improve the modification coordination process. DOD and Air Force officials concurred with our findings and outlined plans to (1) revise procedures to improve and monitor the coordination process and (2) develop commandwide training on coordinating modification programs.

In August 1984, the Air Force Audit Agency reported[5] that AFLC had initiated unnecessary parts repairs of $2.7 million and processed unnecessary purchase requests of $4.7 million primarily because modification program data in the requirements system were either out of date or invalid. The Audit Agency recommended that AFLC modify its system and revise its regulations to require that each air logistics center ensure that requirement computations are updated with modification data. AFLC concurred with the recommendations.

Consumable Items Became Reparable

Unrequired stock for 8 of the 51 items, or 16 percent, was caused principally by consumable items that became economically reparable. Aircraft and equipment components fall into two general categories—those discarded when they fail (consumable) and those repaired and reused (reparable). Since consumable items are not generally repaired, procurement is primarily based on how often they fail. In contrast, a portion of the requirement for reparable items can be met through repair rather than purchase. Consumable items can become repairable when item managers and equipment specialists determine that the items are economical to repair. This can happen if either the price increases or the cost to repair drops, making it more economical to repair the item than to buy it. Such a change would reduce the computed requirements for new purchases because broken items would be replaced by a repaired item instead of a

[4]Improving the Air Force Modification Process Will Benefit Management of Spare Parts in the Air Force and Defense Logistics Agency (GAO/PLRD-83-3, Oct. 15, 1982).

[5]Requirements Computations for Spare Parts Affected by Modification Programs (Air Force Audit Agency, Project No. 4010215, Aug. 15, 1984).

new item. We did not identify prior reports that relate to consumable items becoming repairable.

Older Aircraft Phased Out

Unrequired stock for 8 of the 51 items, or 16 percent, was the result of older aircraft being replaced. In such cases, flying hour requirements declined because the number of applicable aircraft were phased down or out of the inventory earlier than originally scheduled. Requirements and subsequent procurements for items applicable to these aircraft are determined based on flying hour programs for the aircraft. Therefore, changes in flying hours cause changes in requirements and inventories of these items. For example, one of the eight items was a fuel control for the F-4 aircraft engine. In May 1986, 26 fuel controls were purchased for $759,200 to rebuild engines. However, in July 1987 the rebuild program was canceled because of an accelerated phase-out of the F-4 aircraft. Between March 1986 and September 1987, the flying hours projected for 1988 in the fuel control's requirement computation dropped 57 percent. As a result, 107 fuel controls valued at $3.2 million were in unrequired stock as of September 30, 1987.

Prior Report Dealing With Related Issues

In November 1984, we reported[6] that two air logistics centers had overstated their needs, by a projected $31.1 million, for spare parts for aircraft that were being phased down or out. We also projected that the centers had understated spare parts requirements for new aircraft by $28.8 million. The errors were attributed to the fact that automated systems did not always identify all aircraft on which a part was used and incorrectly computed flying hour ratios by using standard time periods rather than actual procurement lead time. We recommended management reviews to ensure that accurate weapon system application data are maintained in the requirements system. We also recommended revising the forecasting system so that the flying hour ratio considers the actual aircraft model using the part and the estimated procurement lead time. DOD and the Air Force agreed with our first recommendation but did not agree with using lead time in computing the flying hour ratio. They believed that using actual lead time might result in buying excess inventories. We disagreed because using standard times could result in buying too much in some cases and too little in others.

[6]The Air Force Can Improve Its Forecasts of Aircraft Spare Parts Requirements (GAO/NSIAD-85-2, Nov. 19, 1984).

War Reserve or Safety Level Requirements Decreased

Unrequired stock for 5 of the 51 items, or about 10 percent, resulted primarily from decreases in Air Force requirements for war reserve material or safety levels for peacetime stocks. For example, recent Air Force policy decisions reduced war reserve requirements. In March 1987, the Air Force reduced the number of tactical aircraft expected to be mission capable from 20 to 18 (out of a 24-aircraft squadron). In April 1987, AFLC estimated that the change reduced the gross war readiness spares kit requirements by $1.2 billion.

Also, the Air Force adds a variable safety level to peacetime needs to minimize the chance of being out of stock. Fluctuating safety levels can also cause unrequired stock. For example, one of the five items was a recorder for a reconnaissance system. In September 1986, the Ogden Air Logistics Center spent $7.9 million for 60 recorders, of which 31 recorders were to satisfy a variable safety level. By September 1987, the variable safety level decreased to six and resulted in $1.6 million of unrequired recorders.

Prior Reports Dealing With Related Issues

In November 1986, the Air Force Audit Agency reported that factors used to compute wartime needs for electronic countermeasure systems were not supported by use data.[7] The Audit Agency reviewed five subsystems and found that their computations were based on unsupported estimates because the Strategic and Tactical Air Commands did not collect or retain actual peacetime use data. For one undelivered subsystem, the buy requirement of $711 million was overstated by about $464 million. In response, the Commands included peacetime use data in their computations of wartime needs.

In February 1985, the Air Force Audit Agency reported that the acquisition quantities for many items involving millions of dollars may have been overstated by unnecessary increases in variable safety levels.[8] In response, AFLC determined that a programming error during conversion from one computer system to another had caused the overstatement. In a follow-up sample after the programming error was corrected, the Audit Agency found that 206 of 385 items had reductions of $227 million in the safety level requirement. Of the $227 million in reductions, item managers terminated $104.7 million in purchase requests, but left

[7]Review of the Support for the Fiscal Year 1985 Spares Budget Requirements in AFLC (Air Force Audit Agency, Project No. 5126123, Nov. 14, 1986)

[8]Fluctuations in the Variable Safety Level Requirements for Recoverable Items (Air Force Audit Agency, Project No. 4126125, Feb. 17, 1985).

another $114.1 million on order to purchase stocks for future-year routine requirements and war reserves not in DOD's budget. Item managers did not terminate the remaining $8.2 million because of excessive termination costs.

Reliability Improved

Unrequired stock for 4 of the 51 items, or 8 percent, was primarily the result of improved parts reliability. Improvements occur from modifications, improved manufacturing or repair processes, and changes in aircraft mission. For example, in September 1986, 539 turbine blades for the A-7 aircraft engine were purchased for $748,164. After the blades were received, a new repair process was developed that increased the life of the blade. This action increased stock availability and resulted in 1,039 blades valued at $1.5 million in unrequired stock by September 30, 1987. We did not identify prior reports related to improved part reliability.

Conclusions

Four of the six reasons that the items included in our review became unrequired are related to factors that have been the subject of prior audits. Although DOD and the services have taken steps to correct many of the previously reported problems, our current review reinforces the need to control or at least to better anticipate and plan for the causal factors. Such factors include overestimated use rates, modifications that reduce demand, phase-out of older aircraft, and fluctuation in war reserve and safety level requirements.

Agency Comments and Our Evaluation

DOD agreed with the thrust of findings and conclusions in this chapter, and said that top level emphasis and controls are needed to attack the growth in unrequired inventories. DOD said a major program is underway to reduce unnecessary inventory growth. DOD cited efforts to catalog items to eliminate duplicate items, revise policy on retention and inventory stratification, reduce leadtimes, terminate more excess on order materiel, incorporate a weapon systems management program, and modernize data processing systems.

DOD also stated that because our analysis focused on unrequired stocks with a recent or in-process procurement, we did not address such other major additional causal factors as increased material returns, a conservative disposal policy, and price differences from 1980 to 1988.

We agree that our analyses focused on actions during recent years, and that the analyses would not reflect causes outside that scope. We focused on the period for which the Air Force and Navy retained records of transactions and requirements computations. Also, that period would be most relevant to current DOD policies and procedures. We considered in our tests the causal factors cited by DOD. We discussed price differences in our July 1988 report, and the differences accounted for a significant portion of overall item value, but not for the greater rate of increase for unrequired items. The other factors did not arise as major causes for our selected items.

Procurement Management Practices Contribute to Growth in Unrequired Stock

Three procurement management practices contributed to the growth in unrequired stock for some items we reviewed. These include

- not evaluating whether orders for unneeded assets should be terminated,
- receiving material before required, and
- procuring items in excess of the economic order quantity.

The DOD Inspector General and GAO have previously reported on these problem areas.

Orders for Unrequired Assets Not Terminated

To prevent buying unrequired items, Air Force and Navy requirements systems identify quantities of material that are on order for potential termination because they are excess to requirements. At least 36 of the 55 selected items[1] that had unrequired stock had quantities identified for potential termination when last on order. The 36 items included 26 of 33 Air Force items and 10 of 22 Navy items. Because it appeared a great deal of excess material was on order, our sample was designed to show the general magnitude of the excess rather than a precise value, which would have required much more work. Prior audit reports have recommended that the Air Force and Navy terminate more orders for unrequired material. Both services are increasing terminations, but could take further action.

Changes in item use, production lead times, repair cycles, and other factors can reduce requirements for items after they have been ordered. To prevent acquiring unrequired items, the requirement computation system identifies orders that exceed requirements for possible termination. Item managers check the computation and consider such factors as how much production lead time has passed and whether any of the order has been delivered. They forward recommendations for termination to procurement personnel who decide whether termination is in the government's best interest by considering such factors as the amount of termination costs that might be incurred.

Based on available documentation, at least 26 of the 33 Air Force items had quantities on order identified for potential termination. Of the remaining seven items, two were not identified for termination, and no documentation was available to conclude whether the other five items

[1]The 55 items include the 51 with reasons for growth identified in table 2.2 and the 4 with unknown reasons for growth.

were ever identified for termination. Of the 26 identified, item managers recommended 5 for termination, but only terminated 2. Procurement personnel cited excessive contract termination costs as the reason for not terminating the other three. For 11 of the remaining 21, item managers cited management decisions based on anticipated future use as the reason for not terminating. Item managers for 3 of the 11 items provided documentation showing their decisions were not solely based on accepted item management principles, but were also based on meeting budget obligation goals that were set to encourage spending appropriated funds. In the remaining cases the reasons cited for not cancelling the Air Force items met Air Force criteria, or the item was erroneously recommended for termination because of errors in the requirement computation.

Item managers recommended terminating quantities on order for 10 of the 22 Navy items in unrequired stock. ASO terminated contracts for three items. It did not terminate the other seven orders primarily because it believed that termination costs were excessive, or because most of the items had already been delivered.

In response to recent audits, however, AFLC and ASO are both taking actions to terminate more orders for unrequired items.

Air Force Terminations

In January 1987, the DOD Inspector General reported that the San Antonio Air Logistics Center had improved spare parts availability for the F100 engine, but that orders for unrequired engine parts were not being terminated.[2] The report cited orders for 13 items valued at $34 million that exceeded current requirements. The Air Force then emphasized to the Center the need to process terminations according to Air Force policy.

In August 1987, we reported that two air logistics centers had orders for aircraft parts that exceeded requirements by $103.2 million.[3] Out of a sample of 44 items with on order excess of $74.2 million, the centers had terminated only $1.8 million (3 percent), although it would have been cost-effective to terminate an additional $24.9 million. In commenting on that report, DOD agreed that improvement was needed and stated that it

[2]F100 Aircraft Engine Spare Parts (DOD Office of the Inspector General, Report No. 87-069, Jan. 16, 1987).

[3]Military Procurement: Air Force Should Terminate More Contracts for On-Order Excess Spare Parts (GAO/NSIAD-87-141, Aug. 12, 1987).

would issue new policy guidance to improve the Air Force's termination process upon receipt of additional information from an ongoing DOD Inspector General review.

In a February 1988 follow-up, we reported[4] that the Air Force's value of on-order excess material continued to grow but that actions taken or planned by the Air Force should improve the termination process. AFLC officials said the process would improve when AFLC implemented revised policies, including an economic model software package to determine whether on-order excesses could be economically terminated. In June 1988, AFLC implemented both aspects. However, guidance at the time of our current review still discouraged terminating the maximum number of orders for unrequired items.

Portions of current AFLC guidance on amending purchase requests and terminating orders, which are summarized below, discourage item managers from reducing quantities on order.

- An April 1986 AFLC memorandum stated that reducing quantities on order could hinder the Command's budget execution goals and jeopardize weapon system support. AFLC prohibited changes in quantities on order if they resulted only from a change in the variable safety level.
- A March 1987 AFLC memorandum to air logistics centers regarding reduced Air Force war reserve requirements instructed the centers to "... have your item managers closely scrutinize the March 1987 DO41 computations and avoid terminating on-order assets or amending purchase requests whenever prudent."

Navy Terminations

Prior audits have also identified weaknesses in Navy terminations of orders for unrequired items. For example, in March 1985, we reported that the Navy could terminate more orders for unrequired material.[5] From sampled items with $60.5 million on order identified for potential termination, $25 million could have been recommended for termination, but only $1 million was recommended by the item manager. Of this amount, only $429,000 was actually terminated. We recommended revising thresholds used to identify potential terminations, timely review of potential terminations, supervisory review of termination decisions, and

[4]Air Force Budget: Potential for Reducing Requirements and Funding for Aircraft Spares (GAO/NSIAD-88-90BR, Feb. 18, 1988).

[5]The Navy Can Increase Cancellations of Procurement for Unneeded Material (GAO/NSIAD-85-55, Mar. 22, 1985).

discontinuing the practice of adding requirements to items with potential terminations. DOD agreed with all but the last of these recommendations.

In May 1988, the DOD Inspector General reported that ASO still did not have an effective process for identifying and terminating unrequired assets on order.[6] In response, ASO officials stated that they planned to revise termination policy to provide better internal controls over the process. At the time of our review, the new termination policies were still in draft and had not been implemented at ASO.

Materials Received Sooner Than Required

In addition to the reasons previously cited for growth in unrequired inventories, 5 of the 29 Air Force items identified in table 2.2 also had overestimated procurement lead times. Procurement lead time represents the administrative and production time required to order and receive parts. It begins with the purchase request and ends with the first significant delivery (10 percent of the total contract quantity). Procurement lead time determines when an order must be placed. If the time is underestimated, inventories of an item could run out. If the time is overestimated, items could arrive sooner than necessary.

For example, one of the five items was a transmitter for radar on the F-16 aircraft. In July 1986, 251 transmitters valued at $1.4 million were purchased. The supporting March 1986 requirement computation used a total estimated lead time of 31 months based on contractor estimates. However, the actual lead time proved to be only 13 months. Mainly as a result of this factor, 212 transmitters valued at $1.2 million were in unrequired stock as of September 1987. Because the procurement was more than 2 years ago, we could not determine if a more accurate estimate of production lead time could have been made from information available at that time. However, the Logistics Management Institute has reported that many contractors overestimate or "pad" their production lead time to cover administrative delays and to avoid delinquency problems.

In 1986, we reported on a related problem that resulted in material being received sooner than required.[7] We found that two air logistics

[6]Contract Terminations At the Naval Aviation Supply Office (DOD Office of the Inspector General, Report No. 88-153, May 23, 1988).

[7]Military Logistics: Buying Spares Too Early Increases Air Force Costs and Budget Outlays (GAO/NSIAD-86-149, Aug. 1, 1986).

centers routinely initiated purchases of aircraft spares up to 14 months earlier than necessary. If the centers had not initiated the early purchases, they could have (1) avoided a premature investment of $374.5 million, (2) avoided holding costs of $52.2 million, (3) effected one-time reductions in funding requests, obligations, and outlays of about $125.4 million for 1984 procurement, and (4) reduced the risk of acquiring materiel that might become obsolete before it is used. We recommended compliance with AFLC Regulation 57-4, which stipulates that routine purchases should be initiated at times that will allow them to be received when needed, considering procurement lead times.

In response to our 1986 report, DOD stated that early initiation did not necessarily result in the receipt of material before it was needed because the Air Force contracts for a specific delivery date and can refuse to accept early deliveries. DOD also stated that the requirements system is self correcting since on-order assets are applied against future requirements. Although DOD disagreed with our 1986 findings, it stated that it would limit early initiation to 12 months because more than 12 months early could result in premature obligation of funds.

We considered a 12-month limitation inadequate to resolve the problems we had identified. For several years the air logistics centers had routinely included standard provisions in their spare parts contracts authorizing contractors to deliver early. Of 140 purchases in our review, 133 had actually been delivered and accepted early. We also expressed concern with DOD's statement that the requirements system is self correcting. The statement assumes that future requirements will not change and spare parts purchased prematurely will ultimately be used. If the assumption is incorrect, it could result in procurement of material that may not be used. Even if requirements do not change, early procurement is not necessary and causes premature outlays, increased budgets, and unnecessary holding costs.

In February 1988, we reported on a follow-up review where we found that the Air Force's fiscal year 1987 and 1988 buy guidelines did not contain a 12-month limitation and could be interpreted as authorizing premature initiation.[8] Moreover, the Oklahoma City Air Logistics Center's buy guidelines required that purchase requests be initiated more than a year earlier than needed.

[8]Air Force Budget: Potential for Reducing Requirements and Funding for Aircraft Spares (GAO/NSIAD-88-90BR, Feb. 18, 1988).

During our current review, we found provisions in the Air Force's fiscal year 1989 buy guidelines and the five centers' supplemental instructions encouraging early procurement initiation to meet budget obligation goals.

Procurement Exceeded Economic Order Quantity

For 3 of the 22 Navy items identified in table 2.2, inventory managers procured consumable assets in excess of economic order requirements.[9] The amount purchased in excess of the recommended quantity for the three Navy items totaled 3,597 units valued at $396,895. For example, ASO initiated a purchase for 6,541 consumable compressor rotor blades costing $84 each. Only 2,235 of these were needed to bring the stock position up to the reorder level. The economic order quantity principle would have added 723 blades for a total of 2,958. A policy to buy at least a 1-year supply increased the procurement by 3,583 blades costing about $300,000.

In January 1988, we reported that the practice of buying more than the economic order quantity contributed to the Navy's growing inventory of unrequired stock.[10] At that time, we recommended that the Navy not buy more than the economic order quantity unless a larger procurement would result in quantity discounts that more than offset the additional holding costs.

In response to that recommendation, DOD said the Navy would (1) in the future buy the economic order quantity for items with well-established demand patterns, and (2) buy 1- to 2.5-years worth of items that it believes have stable or very stable demand. DOD cited changes in contracting that could result in orders being placed weekly and as many as four buys being in process at the same time. DOD also stated that a 1986 study concluded that buying under a 1-year policy would reduce total variable costs by 7 percent.

We did not believe DOD's reasons justified buying a year's or more worth of stable demand items. We noted that existing controls should prevent multiple buys in process. We also examined the study cited by DOD and found that it concluded that increasing the ordering quantity from 3 to

[9]The economic order quantity principle is a mathematical technique used to determine the purchase quantity with the lowest total costs for ordering and holding inventory to meet requirements. DOD policy generally requires an order quantity of not less than 3 months nor more than 3 years of supply.

[10]Navy Supply: Economic Order Quantity and Item Essentiality Needs More Consideration (GAO/NSIAD-88-64, Jan. 6, 1988).

12 months would increase total variable costs by 7 percent, not reduce them.

The Logistics Management Institute subsequently reached a conclusion similar to ours. In August 1988, the Institute reported that from 1984 to 1985, the services increased their minimum order quantities from a 3-month supply to a 1-year supply to take advantage of price reductions and to offset procurement lead times. The Institute found that larger order quantities had resulted in price breaks for some items and reduced procurement work load. At the same time, (1) order quantities had doubled since 1983, (2) the annual holding costs had increased by more than $600 million, and (3) unrequired stock had grown by over $14 billion, an 86 percent increase. The Institute recommended that DOD direct the services to eliminate the 1-year minimum order quantity, use the economic order quantity principle to determine order quantities, and override it only when larger quantities are cost-effective.

The Institute did not include Air Force recoverable items in its study because the Air Force requirement system does not compute a specific order quantity. However, according to an Institute official, the Air Force, as well as the Navy and Army, uses a minimum order quantity that consists of procurement lead time requirements, plus a 12-month supply.

Conclusions

We believe that DOD, Navy, and Air Force actions on terminating unnecessary orders, initiating purchase requests, and applying the economic order quantity principle are not adequate. Although the services have tried to terminate more orders, the Air Force still has conflicting guidance for inventory managers, and the Navy still has weaknesses in its termination process.

As previously reported, the Air Force routinely initiates purchase requests before the necessary procurement lead time and the Navy unnecessarily buys assets over the economic order quantity. Both practices contribute to the acquisition of inventory before it is needed.

Recommendations

We recommend that the Secretary of Defense direct the Secretaries of the Air Force and Navy to improve its procurement management prac-

tices that have contributed to the growth in unrequired stocks. Specifically,

- the Secretaries of the Air Force and Navy should review their policies on terminating orders for unrequired items at all levels to ensure they clearly support termination whenever practical;
- the Secretary of the Air Force should stop the practice of initiating purchase requests earlier than required; and
- the Secretary of the Navy should stop the practice of buying more than the economic order quantity, unless there is such specific justification in each case as a quantity discount which more than offsets additional holding costs.

Agency Comments and Our Evaluation

DOD agreed with our findings and recommendation regarding orders for unrequired assets not terminated and procurements that exceeded the economic order quantity. DOD described progress and ongoing actions in both areas. For example, DOD recently clarified its order quantity policy to reestablish the need to use economic order quantity methods and to preclude the use of arbitrary 12-month or larger order quantity floors.

DOD did not agree with our recommendation that early initiation of purchase requests be stopped because the practices have resulted in, or contributed to, buying items sooner than needed. According to DOD, it may need items any time within the fiscal year, and it supports initiating procurement documentation early within the fiscal year. DOD cited an example whereby, if the Air Force had implemented our recommendation, only about 25 percent of the funded requirements would be obligated within the appropriation year. DOD said that since the time of our 1986 recommendation, no new information had been provided to warrant a change in the DOD position.

We believe DOD's disagreement with our recommendation is inconsistent with DOD's response to our similar recommendation in August 1989 concerning Army spare parts.[11] In that case, DOD concurred and noted Army actions to stop unauthorized buy-ahead procurements.

Furthermore, in February 1988 we reported on our follow-up of DOD's 1986 comments that its actions do not affect delivery dates. We noted that 95 percent of sample deliveries was delivered and accepted early;

[11] Military Logistics: Buying Army Spares Too Soon Creates Excess Stocks and Increases Costs (GAO/NSIAD-89-196, Aug. 28, 1989).

an average of 12.2 months at one air logistics center visited and 14.1 months at the other. Thus it has been clearly established that DOD and Air Force policies and actions were resulting in unnecessarily early deliveries.

DOD's improved contracting efficiency from initiating procurement requests early and its reduced ability to obligate funds do not automatically justify buying items too early. As with the use of economic order quantity principles, we believe that reduced procurement costs must be shown to outweigh additional inventory costs before DOD overrides requirements computations. If not shown to be cost-effective for other reasons, spending money sooner than needed just to improve budget obligation rates is inappropriate.

DOD partially concurred with our recommendation that the Navy should stop procurements of more than the economic order quantity, indicating our recommendation should not exclude other factors. We did not exclude other factors, and clarified our recommendation.

Related Factors That Increase the Risk of Unrequired Stock

In addition to causes that directly contributed to the growth of unrequired stocks for specific items we selected, we identified factors that may hinder management's control over the growth in unrequired inventories. The primary factors are (1) some DOD inventory reporting initiatives that reduce visibility of unrequired inventories and (2) growth in Air Force stocks held to meet future requirements that could increase the risk of unrequired stock.

Some DOD and Air Force initiatives to improve inventory reports may aggravate existing problems with accurately reporting unrequired stocks. Although certain efforts would improve the accuracy of inventory data and reports, the efforts to redefine DOD material classifications would, in many cases, mix required and unrequired stocks. The mixing would reduce the visibility of unrequired items and could reduce the quantities of unneeded orders eligible for termination.

With the growth in the Air Force's required stock held to meet peacetime requirements beyond the current year, continued high levels of unrequired stocks could be experienced as some items become obsolete or have declining demand. The precise level cannot be readily identified because of the way required stocks are reported. However, since 1980, stock held for the budget year (the year following the current fiscal year) increased more than 400 percent to $6.6 billion for Air Force aircraft parts alone. Stocks held for long-term use have higher rates of obsolete items.

Efforts to Improve Inventory Reports

DOD has expressed concern about the timeliness, accuracy, and completeness of its inventory reports. To improve the reports, in April 1988 DOD requested its Logistics Systems Analysis Office to examine reporting sources and compilation processes used by DOD components for the agency's annual inventory report. The Office completed the study in February 1989 and found numerous weaknesses in existing reports. DOD officials hope to improve the reporting process, for example, by having all components use the same cut-off date to meet the December 31 inventory report date.

The Air Force is also attempting to improve its reports. According to AFLC officials, prior to 1987 the air logistics centers could not correct errors in the stratification data used to prepare the annual inventory report due to limitations in the automated requirements system. As a result, inventory reports for prior years contained significant errors. For

example, 1986 reports contained a $3.3-billion error because 4 units of an item were erroneously entered as 1,000,004 units.

In September 1987, the Air Force was able for the first time to rerun its stratification reports after correcting and validating the data by means of a new automated requirements database. AFLC's first attempt at eliminating errors in the report resulted in reductions of both required and unrequired inventory. The value of the required aircraft parts inventory decreased from $19.5 billion to $18.9 billion, and unrequired stock decreased from about $12 billion to $8 billion. Despite these efforts, file maintenance and system errors still occur. Our 40 selected Air Force items included 7 that had been incorrectly reported in unrequired stock. For example, one item's data were wrong because the item manager had erroneously entered 17,250 assets on hand instead of the correct number of 150 into the requirement computation.

The Navy follows a similar process of validating, correcting, and restratifying its inventory before preparing the annual inventory report, but is also continuing to experience system errors. We found that 3 of our 25 selected Navy items had been erroneously reported in unrequired stock.

Inventory Reporting Initiatives May Impede Control of Unrequired Stock

DOD and Air Force changes to reporting criteria would show some unrequired inventory as required inventory. According to DOD and Air Force representatives, the actions are intended to recognize that certain unrequired assets were obtained in the best interests of the government. However, the actions would reduce the visibility of unrequired stock and could reduce the quantities of unneeded orders eligible for termination.

DOD Initiatives That Reclassify Unrequired Stock

DOD is considering actions to add

- a third year of requirements to inventory reports,
- requirements to cover quantities exceeding requirements if purchased to obtain discounts, and
- requirements to cover life-of-type buys (purchases made to ensure future availability of parts when faced with the loss of a supplier).

By adding an additional year of requirements to the existing 24-month requirements forecasting period, DOD plans to reclassify as required stock assets currently unrequired. They are not projected to be required until the year following the budget year, more than 24 months in the

future. Similarly, DOD would reclassify as required stock assets that were purchased over computed requirements because it was economically in the best interest of the government, such as in economic order, minimum quantity, or life-of-type buys.

Even though it may be useful to recognize that stocks were obtained by intent even if not currently required, decisionmakers need to know the extent of purchases that exceed requirements. Even when justified, these purchases should be separately identified and not commingled with required stock for reporting purposes.

Air Force Initiatives That Reclassify Unrequired Stock

In April 1988, Air Force headquarters directed AFLC to increase the approved force acquisition objective and the criteria used to identify unneeded items on order for potential termination. The Air Force expressed concern that the growth in unrequired items on order and the relatively low percentage of terminations leaves the items open to congressional budget cuts. In response, AFLC

- temporarily authorized an additive to prevent on-order excesses from being reported as unrequired once the Air Force has decided not to terminate the order and
- is considering adding another year of requirements to the termination period to reduce the number of orders for potential termination.

In addition, Air Force headquarters reclassified assets that were believed to be uneconomical to repair as unstratified (in transit) stock in 1987 and plans to report them as required in the future. Such stocks were previously identified as potential excess (having no economic or defense reasons for retention).

Additive Used in 1988 to Prevent Some Unrequired Stocks From Being Reported as Such

In June 1988, AFLC authorized air logistics center personnel to manually add items to requirements in its automated system to reclassify unneeded stock on order to required stock, if personnel decided not to terminate the order. For the Air Force's system to reclassify the on-order excess material, the additive must be large enough to cover not only the unneeded stock on order, but also all quantities of unrequired stock already on hand. AFLC reports show that the additive moved approximately $600 million in stock from unrequired to required, as of March 1988.

Four of the five air logistics centers expressed concerns about the additive. The centers believed the additive would

- conflict with AFLC Regulation 57-4, which precludes the use of an additive to change an excess item to a required one;
- cause unrequired stock to be reported as required stock to the Congress;
- be difficult to control and could result in "all kinds of errors," including recommending a buy for an unneeded item; and
- distort repair requirements.

During our review, we expressed concern to AFLC officials about the additive, and the officials said they would direct the air logistics centers to manually reverse that portion of the additive that covered on-hand inventory, but not the portion on order. In November 1988, however, AFLC cancelled the use of the additive entirely. According to an AFLC official, the air logistics centers had complained about increased work load for item managers and difficulty in controlling the additive. AFLC identified additive-related errors which had resulted in erroneous buy requirements for 212 items valued at $7.1 million. AFLC corrected these errors and did not order the items.

Required Stock on Order May Be Redefined to Include Some Unrequired Stocks

AFLC is also considering extending the termination period in its computations. Assets on order that exceed the requirement are now identified by the system for potential termination. Extending the termination period would add an amount equal to another year of requirements. Thus, the system would identify fewer assets on order for potential termination. According to AFLC officials, extending the termination period would permit items on order to remain on order, but would not permit the initiation of more orders for unrequired items.

AFLC plans to test implementing the change manually. If the test substantially reduces reports of unrequired assets on order, AFLC plans to implement the change manually at its air logistics centers, until a programming change can be made to the automated system.

This planned Air Force change demonstrates how DOD's proposed changes in reporting criteria can affect how its inventories are managed. Reducing the quantities of unneeded items eligible for termination will reduce the effectiveness of terminations as a means of minimizing the acquisition of unneeded items.

Unrequired Stock Reclassified

In 1987, the Air Force reported $765 million of stocks that are not economical to repair as unstratified (in transit). In 1986, the stocks had been reported as potential excess (having no economic or defense reason for retention). The Air Force's stratification program projects that a certain amount of the on-hand inventory of repairable assets will be

uneconomical to repair. The program identifies these assets for eventual disposal. However, if 1988 AFLC instructions are followed, the Air Force will report such stocks, now totaling $759 million, as required stocks. DOD instructions state that assets anticipated to be unrepairable should be classified as potential excess.

Such items are not excess to requirements, but are of no value because they cannot be economically repaired. In these cases, we agree with the Air Force that potential excess may not be an appropriate category and that some form of "pending disposition" category may better describe the status. However, changes should be coordinated with DOD to ensure consistent treatment throughout the agency.

Growth in Air Force Required Stocks Beyond Wartime and Current-Year Needs

We found significant growth in the Air Force's inventory of secondary aircraft items used to satisfy operational requirements beyond the current year. The precise level of such stocks cannot be readily identified because of the way required stocks are reported. This growth suggests that unrequired stocks could increase to the extent that the required stock is subject to the same factors responsible for increases in unrequired stocks.

The Air Force generally identifies stock not needed in the current year as budget year stocks (wartime needs are identified separately). Between 1980 and 1988, the inventory available to satisfy budget year requirements grew $5.3 billion (416 percent), from about $1.3 billion to $6.6 billion. The budget year category is 1 of 10 requirement categories in Air Force reports, but it represented 41 percent of the total $12.9 billion for the Air Force's required inventory growth for aircraft parts between 1980 and 1988. As a result, the aircraft parts inventory held for budget year demands grew from 18 percent of the total aircraft parts required inventory in 1980 to 33 percent in 1988.

Similarly, unrequired stocks held in an economic retention category for future peacetime needs beyond the budget year grew $2.9 billion (740 percent) from $.4 billion to $3.2 billion between 1980 and 1988. Air Force officials said this does not mean that the Air Force has unnecessarily purchased items to meet future requirements. They said the increased procurement lead times have made it necessary to project and then buy for requirements further into the future to maintain an adequate level of support.

Increased procurement lead times necessitate ordering items sooner, but only to ensure that items arrive in time to meet requirements. If lead times are overestimated, causing items to arrive sooner than necessary, then stocks not needed in the current year could increase. For example, AFLC programmed its system in 1985 to increase the administrative lead time to 9 months for all repairable items regardless of actual experience. AFLC said this was to anticipate the administrative requirements in complying with Competition in Contracting Act of 1984. However, when AFLC allowed the system to again use actual data, the average lead time fell to 7.8 months by September 1987.

Air Force Spending Guidelines May Contribute to Earlier Purchases of Items

Appropriated funds for aircraft spares are available for obligation over a 3-year period. Prior to fiscal year 1986, Air Force policy provided that current year funds could only be used to buy current year requirements (i.e., 1985 funds could only satisfy 1985 requirements). In response to DOD's concern that the Air Force had not fully obligated available funds, the Air Force changed its funding policy in October 1985. Under the new policy, any available funds could be obligated to satisfy current or future year funded requirements. For example, unobligated fiscal year 1989 funds will be available to satisfy fiscal year 1990 and 1991 requirements when those years are approved for funding. DOD also established a goal that 92 percent of its current-year funding be obligated in the first year. In commenting on our report, DOD said the Air Force changes were based on the content and cumulative nature of spare parts budgets, not in response to DOD pressure.

As cited in our February 1988 report, AFLC stated it was $898.4 million behind its planned obligation of funds for fiscal year 1985 through August 31, 1987. The Air Force said the obligation shortfall occurred because fiscal year 1985 funds were used to satisfy fiscal year 1987 requirements. Thus, funds budgeted for 1987 were no longer needed for the purposes originally justified.

In January 1988, AFLC advised the air logistics centers that because of limited funding their fiscal year 1988 budget obligation goal had increased from 92 to 100 percent. AFLC also noted that the large unobligated balances in fiscal years 1986 and 1987 "cannot be tolerated," and that unobligated balances for both years must be closed out prior to March 31, 1988, and funds not obligated by then would be redistributed.

AFLC and the air logistics center guidelines stress the importance of meeting budget obligation goals. They encourage early initiation of purchase requests and the use of multiyear contracts and quantity discount buys. Such guidance can result in buying items before they are needed. For example, one of the Air Force items in our sample was last purchased on a multiyear contract. In that case, the last procurement of $8 million was in excess of computed requirements and the purchase was made with 1984 funds in the last year of their availability. Since it is unlikely the unrequired stocks on hand will be used before the item is phased out of the U.S. inventory, the Air Force decision is not likely to be cost-effective.

Conclusions

We believe that efforts by DOD and the Air Force that reclassify unrequired stock as required stock could be counterproductive. The efforts may mask the need to address the growth in unrequired stock and could reduce the quantity of unneeded on-order items eligible for termination.

Less visibility over the inventory would impede efforts by decisionmakers and managers to identify and address problems contributing to the growth in unrequired items. Decisionmakers need to know the extent of purchases that exceed program requirements because of such factors as quantity discounts or life-of-type buys. They will not know the extent of unrequired stocks if DOD and the Air Force implement policies that would include such purchases among required stocks.

The reclassification of stocks could also reduce the quantities of unrequired orders eligible for termination. DOD has proposed to increase the approved force acquisition objective to include war reserves and 36 months of peacetime operating stocks. Although the specific impact of such a change on DOD-wide purchases is not clear, the Air Force is considering changing its computer program to not recommend termination of unneeded items on order unless the order would result in more than 3 years of peacetime operating stocks on hand. The Air Force criteria for termination was previously up to 2 years of stock accepted.

The large growth of Air Force-required peacetime stocks for use beyond current-year operations can also increase the risk of reduced demand or obsolescence before the items are used. The significant increase in the value of the inventory available to satisfy future requirements in the budget year category—to $6.6 billion in 1988—portends continued problems with unrequired stock where obsolescence or reduced demands occur.

Some level of unrequired inventory must be viewed as a cost of doing business. Certain proposed DOD and Air Force changes cause concern, because they add to existing pressures to raise required inventories well above the levels actually needed. The changes could allow inventories to increase without a stated policy to increase requirements.

The significant growth in unrequired aircraft parts warrants efforts to minimize unnecessary expenditures. We believe that essential steps include improving the visibility of unrequired stock and policy changes to reduce the acquisition of peacetime operating stock well in advance of need.

Recommendations

We recommend that the Secretary of Defense (1) separately identify unrequired inventory that was obtained in the best interests of the government, to ensure that such inventory is properly classified and (2) separately identify assets that are uneconomical to repair and modify DOD regulations to ensure consistent treatment by the military services.

We further recommend that the Secretary of Defense continue to identify unrequired inventory as such and direct the Secretary of the Air Force to cancel efforts to increase the approved force acquisition objective to include an additional year of requirements. Such a change would mean that inventory managers would not have to consider terminating orders that could have been terminated under current criteria.

Agency Comments and Our Evaluation

DOD agreed that inventory reporting weaknesses have resulted in errors and that it is attempting to improve the reports. DOD concurred with our recommendation to separately identify the reasons unrequired assets were obtained and assets that are uneconomical to repair.

DOD disagreed with our recommendation to cancel efforts to increase the approved force acquisition objective to include an additional year of requirements. Also, it said DOD and Air Force changes are not intended to mask unneeded inventories. DOD said its proposed changes would separately identify all additions on stratification displays, and it should not have to terminate on-order items if a future need is forecast. After considering DOD's response, we believe our recommendation is appropriate for the following reasons:

- DOD said we had improperly characterized its efforts to improve the stratification process as a means of reducing inapplicable inventory and

avoiding contract terminations. We do not attempt to determine DOD's intent, but our report shows that the effects of its changes include (1) decreasing unrequired inventory by increasing the Approved Force Acquisition Objective, and (2) reducing the quantity of contracted items eligible for termination.

- DOD said that the stratification process has not been updated in over 20 years, and needs improvement because it does not fully reflect current DOD logistics policies and concepts. We agree and our report addresses the need to improve the stratification process. Our concern is with DOD and Air Force initiatives that could aggravate, rather than alleviate, the process' problems.
- The stratification displays are retained at the service level and are not included in reports to DOD and the Congress. Therefore, the changes we question would mask the growth from those responsible for oversight.
- We agree that needs forecasts are useful but do not believe that the forecasts justify buying items sooner than needed. Thus, DOD should terminate such items. DOD's concern that its components "could conceivably be budgeting for items that also compute as potential terminations" focuses on a valid problem, but implies the wrong solution. We believe DOD should not be ordering items to arrive long before the items are needed.

DOD Classification of Secondary Inventories

DOD categorizes its secondary inventories into six classifications. Two classifications represent required stock.[1]

1. The approved force acquisition objective represents current operating stocks plus war reserves.[2]

2. The approved force retention stock is in addition to the approved force acquisition objective stock and is required to equip and support the U.S. approved forces from the day the war begins until production equals demand. Unlike approved force acquisition objective stock, DOD does not budget for retention stocks.

The remaining four classifications represent unrequired stocks, which are in addition to required stocks.

3. The economic retention stock has no requirement. However, DOD has decided to retain the stock for future peacetime use instead of satisfying possible future needs through procurement. Items retained in economic retention must have a reasonably predictable demand.

4. The contingency retention stock has no predictable demand or quantifiable requirement and normally would be in the Potential Excess category. However, DOD has decided to retain the stock for possible contingencies.

5. The numeric retention stock is the stock for which disposal is currently infeasible or uneconomical, and management has decided to retain it in the supply system. DOD began using this classification in 1982 for some secondary items, but no aircraft items were reported.

6. The potential excess is material excess to all authorized retention levels, but DOD has not determined it to be excess.

[1]We grouped approved force acquisition objective stock and approved force retention stock together because they are categories of required stocks. According to DOD officials, the term "long supply" is used to describe stocks in excess of acquisition requirements. However, DOD's long supply includes materials that are not budgeted for but can be used to equip and support U.S.-approved forces from the day war begins until production equals requirements. Our values for stocks with no requirements do not include approved force retention stocks because they are defined by DOD as required stocks, even if they are not in the budget. Thus, our values for unrequired stocks are less than DOD's values for long supply.

[2]War reserves are stocks that are stored in peacetime to satisfy increased wartime consumption; they are intended to sustain wartime operations until resupply takes place.

Sample of 40 Air Force and 25 Navy Items With Reported Unrequired Stock as of September 1987

	National Stock Number	Item	Value of required inventory on hand	Value of unrequired inventory on hand
Ogden Air Logistics Center				
1	4810-00-962-4394	Regulator valve	$802,967	$15,859,549
2	5855-01-049-0175	Sensor sub-assembly	1,598,890	2,948,602
3	1377-01-057-5431	Rocket remover	321,763	1,937,726
4	1630-01-108-4044	Wheel half assembly	0	1,758,476
5	6720-01-149-3894	Infrared recorder	26,330,294	1,618,666
6	1270-01-153-8700	FET amplifier assembly	912,170	1,164,940
7	1377-00-322-0778	Mechanical initiator	601,747	1,067,397
8	1620-01-071-2308	Landing drag brace	929,340	978,253
Total			**$31,497,171**	**$27,333,609**
Oklahoma City Air Logistics Center				
9	2840-01-160-3158	Compressor rotor	$5,484,074	$6,215,283
10	2915-01-116-5741	Main fuel control	5,443,756	3,218,132
11	2840-01-047-1334	Engine blade	3,109,598	1,485,458
12	3110-00-540-9997	No. 2 bearing	311,126	1,223,194
13	2840-01-153-8687	Turbine shaft	686,002	1,159,968
14	6605-01-190-3673	Rotor assembly	0	1,093,718
15	1660-00-446-3819	Heat exchanger	2,726,944	1,054,231
16	6610-00-107-0249	Pressure sensor	1,133,000	991,375
Total			**$18,894,500**	**$16,441,359**
Sacramento Air Logistics Center				
17	1260-01-237-2273	Display generator	$0	$544,698
18	5945-01-116-0859	Relay contactor sensor	12,594	256,087
19	6105-00-893-1550	Motor A.C.	106,708	216,300
20	6105-00-047-4939	Motor A.C.	87,128	123,563
21	6605-00-736-4315	Computer	117,020	117,020
22	6130-01-100-3027	Power supply component	81,960	111,232
23	6615-00-480-9422	Auto pilot damper panel	221,229	92,607
24	1560-01-117-5272	Tail pipe "A"	65,148	87,808
Total			**$691,787**	**$1,549,315**

(continued)

	National Stock Number	Item	Value of required inventory on hand	Value of unrequired inventory on hand
San Antonio Air Logistics Center				
25	2840–01–136–0472	Duct segment	$3,609,722	$4,682,518
26	2840–01–017–1899	Case assembly	467,888	4,643,961
27	2840–00–371–2174	Drive shaft assembly	2,154,120	4,455,530
28	2840–01–184–8740	Case assembly	2,561,093	3,749,229
29	2840–00–348–6245	Compressor stator vane	225,456	3,537,623
30	2840–00–369–5362	13th stage spacer	1,856,371	3,330,745
31	2835–01–208–0169	Gear box	0	2,887,213
32	2840–01–221–5370	Compressor drive shaft	0	2,137,909
Total			**$10,874,650**	**$29,424,728**
Warner Robins Air Logistics Center				
33	5865–01–100–3768	Control oscillator band I	$23,875,516	$6,322,765
34	6140–01–131–4686	Battery pack assembly	227,192	2,248,758
35	5865–00–155–9262	Drive control	0	2,234,812
36	5821–01–196–6086	Unformatted message element	0	1,495,999
37	5821–01–093–9334	Cockpit TV	720,752	1,359,909
38	1270–01–165–0324	Gun control box	89,462	1,237,553
39	5865–01–103–3109	Signal processor	0	1,234,616
40	5865–01–183–0425	Band I channel assembly	123,144	738,864
Total			**$25,036,066**	**$16,873,276**
Air Force total			**$86,994,174**	**$91,622,287**
Navy Aviation Supply Office				
1	1615–01–145–2434	Transmission assembly	$42,488,730	$10,539,840
2	2840–01–131–4782	Turbine rotor blade	74,227	3,693,819
3	5865–00–101–6830	Amplifier detector	633,680	3,104,320
4	1615–00–051–9587	Swash plate assembly	1,858,400	2,601,760
5	2835–00–069–7490	Compressor impellor	147,826	1,986,407
6	5841–00–001–7075	Radar transmitter	1,852,870	1,972,410
7	1630–01–063–7490	Carrier and lining	2,350	1,666,150
8	6130–01–045–0005	Power supply	96,840	1,549,440
9	1650–01–090–0142	Actuating cylinder	43,810	1,388,440

(continued)

	National Stock Number	Item	Value of required inventory on hand	Value of unrequired inventory on hand
10	5841-00-797-2599	Antenna	149,760	1,382,400
11	1650-01-059-2821	Tailplane actuator	107,600	1,371,900
12	6615-00-010-1427	Gyroscope	264,420	1,346,960
13	1430-01-226-5313	Radio amplipher	152,760	1,273,000
14	2840-01-130-2937	Compressor rotor blade	528,068	1,254,016
15	4730-01-006-9389	Fueling manifold	358,680	1,251,720
16	1620-00-003-0393	Landing drag brace	37,320	1,119,600
17	2840-00-121-9351	Accessory gearbox	111,780	1,117,800
18	7021-01-150-7105	Circuit card assembly	2,912,000	1,081,600
19	1615-01-201-9608	Antifret liner	98,850	1,026,722
20	2835-00-146-3227	Wheel and shaft assembly	2,567,950	1,013,840
21	2840-01-130-2939	Compressor rotor blade	307,607	937,833
22	1680-01-133-6919	Panel indicator	260,400	937,440
23	4920-00-834-7790	Controller assembly	42,120	905,580
24	2840-01-131-0569	Compressor stator vane	185,022	897,522
25	1615-01-154-2722	Main mast assembly	984,540	887,700
Navy total			**$56,267,610**	**$46,308,219**
Total			**$143,261,784**	**$137,930,506**

Comments From the Department of Defense

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301-8000

(L/SD)
PRODUCTION AND
LOGISTICS

November 1, 1989

Mr. Frank C. Conahan
Assistant Comptroller General
National Security and International
Affairs Division
U.S. General Accounting Office
Washington, DC 20548

Dear Mr. Conahan:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "DEFENSE INVENTORY: Growth In Air Force and Navy Unrequired Aircraft Parts," dated September 7, 1989, (GAO Code 391604), OSD Case 8114. While the Department agrees with the overall thrust of the draft GAO report, it disagrees with some of the GAO findings and recommendations.

The Department has an aggressive program underway for reducing unnecessary inventory growth. The program includes: cataloging actions to eliminate duplicate items; revised policy on retention and inventory stratification; revisions to requirements computation models; leadtime reduction; termination of excess on order material; transition to Weapon Systems Management; and ADP system modernization to provide more accurate and timely data for decisions.

As discussed in the enclosure, the DoD is making significant progress in reducing inventory growth, but recognizes that further improvements are needed. Accordingly, the Department will consider the findings and recommendations in this audit, previous audit reports, DoD studies, and ongoing initiatives in its assessment of this area. This assessment, along with the internal control assessments prepared by the Services, will determine if inventory growth should be identified as a material weakness in accordance with DoD Directive 5010.38.

The detailed DoD comments on the report findings and recommendations are provided in the enclosure. The Department appreciates the opportunity to comment on the draft.

Sincerely,

Jack Katzen

Enclosure

GAO DRAFT REPORT - DATED SEPTEMBER 7, 1989
(GAO CODE 391604) OSD CASE 8114

"DEFENSE INVENTORY: GROWTH IN AIR FORCE AND NAVY UNREQUIRED AIRCRAFT PARTS"

FINDINGS AND RECOMMENDATIONS TO BE ADDRESSED IN THE DOD RESPONSE TO THE GAO DRAFT REPORT

* * * * *

FINDINGS

- FINDING A: Inventory Of Unrequired Aircraft Parts Has Shown The Most Rapid Growth. The GAO found that, between 1980 and 1988, the Air Force inventory of aircraft parts increased by $18.8 billion, or 204 percent--rising from $9.2 billion to $28 billion. During this same period, the GAO found the Navy inventory of aircraft parts increased by $8.3 billion, or 181 percent--rising from $4.6 billion to $12.9 billion. The GAO pointed out that the largest dollar increase occurred in required stocks, defined as stocks held to meet war reserve and peacetime operating requirements over a 24 month period--including the balance of the current year. The GAO further pointed out, however, that the greatest percentage increase occurred in unrequired stocks, defined as stocks that are not needed to meet current requirements, but are held (in most cases) to satisfy potential future requirements and possible contingencies. (p. 3, pp. 21-22/ GAO Draft Report)

Now on pp. 2, 15.

DOD RESPONSE: Concur. The Department agrees that the greatest percentage increase occurred in "unrequired" stocks, for many of the same reasons outlined in FINDING B, such as overestimation of item use rates and reduced demand due to modifications. While it is true that the largest percentage of growth occurred in stocks beyond war reserve and two years of peacetime operating requirements, it should be noted that historically, this stock has averaged 25 percent of the total inventory, with stock for current requirements at 75 percent. That ratio has not changed significantly over the past ten years.

See comment 1.

The significant increase in the dollar value of the inventory is a function of several circumstances. Some of these include: the impacts of inflation, the way inventories are priced, the influx of new weapon systems and growth in force

See comment 2.

ENCLOSURE

structure (which introduced many new and more expensive items), and the effects of modifications with the resultant improvements in reliability.

Since the GAO only analyzed "unrequired" stocks with a recent or in-process procurement, it did not address the major additional causal factors in inventory growth including:

See comment 3.

- Increased material returned to the wholesale system of both supply and non-supply inventories of items no longer required by operating commands due to the force modernization programs. When a modification adds new capability or changes a configuration of an aircraft or end item, the result is to buy and repair less to support the old system. Any remaining spares on hand, as well as the previously installed items for the old system, will become "unrequired" inventory.

See comment 4.

- The conservative disposal policy in place since 1984. Items that were originally purchased to support a population of end items are currently retained in the inventory, regardless of the decline in the end item density.

See comment 5.

- Not taking into account price differences when comparing FY 1980 and FY 1988. Price indexing created significant artificial growth in the inventory. For repairable items, indexing affected older items more dramatically than newer items. Since older items comprise a significant portion of the excess universe, that universe grew faster than the applicable universe. The Navy estimates that as much as $6.3 billion of the overall aircraft parts growth reflected in the Aviation Supply Office stratification process (which is the inventory segment included in the $8.3 billion growth), is due to these additional factors.

It should also be recognized that the term "unrequired" stocks is misleading, since much of the stock in this category will be used in the future.

See comment 6.

- **FINDING B: Reasons For Growth In Unrequired Stock.** The GAO reviewed 65 items to determine why the stock had become unrequired--and was able to identify reasons for 51 of the items.

The GAO summarized the major reasons for unrequired stock of the 51 items, as follows:

Reasons	Items with Unrequired Stock: Air Force	Navy	Total	Percent
1. Use rates overestimated	9	7	16	31
2. Modifications reduced demand	3	7	10	20
3. Items became repairable	5	3	8	16
4. Aircraft phased out	4	4	8	16
5. War reserves/safety levels reduced	5	0	5	10
6. Reliability improved	3	1	4	8
TOTAL	29	22	51	101

The GAO pointed out that four of the six reasons the 51 items became unrequired related to reasons that have been identified in earlier GAO and DoD audit reports--the exceptions being items that became repairable and items that experienced improved reliability. The GAO discussed examples of unrequired items for each of the six reasons identified, acknowledging that actions have been taken to correct many of the previously reported problems. While not making any new recommendations based on its current work, the GAO concluded that these results reinforce the need to control, or at least to better anticipate and plan, for the causal factors identified. (p. 5, pp. 22-31/GAO Draft Report)

Now on pp. 3, 16-22.

DOD RESPONSE: Concur. The Department agrees that top level emphasis and controls are needed to attack the growth in unrequired inventories. The DoD has a major program underway for reducing unnecessary inventory growth, including: cataloging actions to eliminate duplicate items; revised policy on retention and inventory stratification; revisions to requirements computation models; reduction in leadtimes; aggressive action to terminate excess on order materiel; transition to Weapon Systems Management; and automated data processing systems modernization to provide more accurate and timely data for decisions.

While the Department concurs with the thrust of the GAO finding, the following points need to be recognized:

- The GAO sample was a biased sample and the results cannot be extrapolated to the entire inventory. The GAO stated: "To determine the causes of unrequired stock, we judgmentally

See comment 7.

See comment 8.

See comment 4.

selected a sample of 40 Air Force and 25 Navy items that had recently been procured or were on order and had large values of unrequired stock for detailed review." This is a biased sample, and its results cannot be used to support the premise, "To identify how unrequired stock occurred." First, the selection of items that had recently been procured or were on order presumes the conclusion that unrequired stock came from procurement of secondary items. In addition, the GAO did not sample ALL items that had unrequired stock (and the sample was not random), nor did the GAO state whether it had determined that unrequired stock came from procurement in the first place.

- A Navy study of the top 50 line items for aviation repairables, conducted after the March 1989 Secondary Item Stratification, revealed that 61.7 percent ($365.4 million) of the value of items on hand in an "unrequired" (i.e. inapplicable to the Budget Year requirement) status were due to aircraft modifications with subsequent turn-in of installed components. In other words, the DoD is now counting in its total inventory, those components that were NOT procured as spares, but rather were previously installed as part of the aircraft, thereby inflating the growth in unrequired spares far more than procurement alone could account for. If the Navy results were extrapolated, a large percentage of the unrequired stock on hand would be found to be due to the turn-in of formerly installed equipment, and the subsequent visibility and valuation of those installs in the Navy Stock Fund.

- The GAO has not recognized that the DoD retention policy is a legitimate reason contributing to this growth. Since 1984 DoD has directed that items applicable to active weapon systems in the inventory will be retained. The result has been considerable growth in contingency retention stocks that is, in many cases, the only means of support for older weapon systems.

- The most common cause cited by the GAO is overestimated use rates. Estimated rates are used in recoverable item requirements computations when historical data is either not available (new items) or is not, in the equipment specialist's judgment, a good indicator of the item's expected activity due to trends or other changes. Since

these predictions, which in many cases are contractor or engineering estimates, are for projected use and expected failures three to four years in the future, the forecasting process is not an exact science. Any fluctuation in the lead time, the item's activity, or the program it supports can alter the validity of the decision. Relatively few items experience stable demands. When the predicted usage does not materialize, the result is inventory beyond current requirements. Experience has proven, however, that many items which appear inapplicable to current requirements at a certain point in time later become required. As stated in the response to the Air Force Audit Agency report (Project 5126117), the requirement to review items with estimated factors that have two years of actual usage history and are in a buy, budget or termination status will be included in the next revision to Air Force Logistics Command Regulation 57-4. Publication of that regulation is scheduled for December 1989. The predictive logistics program in the recoverable requirements computation (D041) assists equipment specialists by analyzing 12 quarters of data and identifying those items which exhibit a significant change, forecasts the trend, and plots the trends for review. The on-line viewing and change capability for the program is scheduled for implementation into the Requirements Data Bank in January 1993 and should enhance the equipment specialists' ability to forecast future usage. An additional Requirements Data Bank capability, scheduled for 1993, will predict required usage for simulated scenarios, such as program changes and weapon system support goals. This capability should improve the forecasting process when future activity is expected to undergo change.

- The draft report cites modifications that reduce demands as a second reason for growth in "unrequired" stock. When a modification adds new capability or changes a configuration of an aircraft or end item, it is true the result is to buy and repair less to support the old system. However, any remaining spares on hand, as well as the previously installed items for the old system, will become "unrequired" inventory. Some of this stock will be used to support the earlier configuration, but all of the stock will be held based on the retention policy cited above. The F100 engine duct segment is cited by the GAO as an "unrequired" item bought, even though it was being replaced by a new item as

See comment 9.

part of the "improved life core" (4000 cycle) engine modification. The item is applicable to the 1800 cycle core engine, that will still be in the Air Force inventory through 1992. A procurement of 73,000 each for $8 million was initiated in November 1985, using 1984 funds. The item was coded reparable at that time, but due to a pending change to consumable (repair cost exceeded acquisition cost), the quantity procured was computed under Economic Order Quantity methodology, which is demand based. In accordance with Air Force policy, the item could not be transferred to the consumable system until it was supportable under that concept; therefore, the assets appeared to be "unrequired" in the reparable computation system stratification report. The item was transferred to Economic Order Quantity in March 1988, and the assets are presently reflected as required stock. The average annual demand rate on this item is 12,000, which indicates most of the assets will be utilized by the end of the support period for the 1800 cycle core engine.

- **FINDING C: Orders For Unneeded Assets Not Terminated.** The GAO identified three procurement management practices that contributed to the growth in the unrequired stock items it reviewed. According to the GAO, one reason for the growth was because Navy and Air Force officials were not always evaluating whether orders for unneeded assets should be terminated. The GAO explained that to prevent buying unneeded items, Air Force and Navy requirements systems identify quantities of material that are on order for potential termination, because they are excess to requirements. The GAO found, however, that 26 of 33 Air Force items and 10 of 22 Navy items it reviewed that had unrequired stock had quantities identified for potential termination when last on order. According to the GAO, Navy and Air Force procurement personnel cited various reasons why the contracts were not terminated--such as anticipated future use and excessive termination costs. The GAO pointed out, however, that both it and the DoD Inspector General have previously reported that the Air Force and the Navy need to terminate more orders for unneeded items (OSD Cases 6670, 7242, and 7541).

  In its most recent report (OSD Case 7541), the GAO found that, although the value of on order excesses continued to grow, actions have been taken and are planned by the Air Force Logistics Command to address the excesses. The GAO observed; however,

Now on pp. 3, 24-27.

that the Air Force guidance on amending purchase requests and terminating orders tends to discourage item managers from reducing quantities on order. With regard to the Navy items, the GAO cited a May 1988, DoD Inspector General report that found the Navy Aviation Supply Office did not have an effective process for identifying and terminating unrequired assets on order. The GAO acknowledged that, in response, Navy officials said they planned to revise their termination policy to provide better internal controls over the process. The GAO pointed out, however, that at the time of its review, the new termination policies were still in draft and had not been implemented. Overall, the GAO concluded that, while both Services are increasing terminations, further actions could be taken. (p. 6, pp. 32-36/GAO Draft Report)

DOD RESPONSE: Concur. The Department concurs that both the Services have taken action and made progress in increasing terminations. The Department also concurs that continued emphasis and action are required. The Navy and Air Force progress to date and ongoing actions are as follows.

-- **Navy** - The Navy has made significant progress in identifying and reducing the number and value of contracts for inapplicable assets. Most of the Navy management initiatives in this area are now showing positive results. Some key items:

- The percentage of on-order material for "unneeded" items (Due In Long Supply) was reduced dramatically between the September 1988 stratification and the March 1989 stratification.

Inventory Stratification Report
(Dollars in millions)

	September 1988 Stratification	March 1989 Stratification
Consumables	13.4%	8.5%
Repairables	13.9%	10.2%

- Terminations have also increased, with $135 million in termination requests issued between March 1989 and August 1989.

- A revised computerized model for termination recommendations is being programmed and should be released to the Aviation Supply Office on or about mid-December 1989.

There are three major issues being addressed under the Navy comprehensive Inventory Management Improvement Program that have significant impact on the whole question of terminations:

1. Timely transmittal of program change information from the program managers to the Inventory Control Point, so action can be taken to minimize any material procurement for systems and weapons with delayed deliveries or for those being phased out.

2. Improving the demand forecasting decision support system so the item managers have better tools for identifying future requirements when there are changes in item use, such as when modifications reduce demand and through reliability improvements.

3. The actual termination decision logic itself. Making the termination decision is straightforward when an item becomes obsolete but more complex otherwise because of economic tradeoffs inherent in terminating and later reprocuring.

-- **Air Force** - The total computed on-order excess has decreased significantly since the March 31, 1986 computation cycle. The Air Force now has the capability within the Requirements Data Bank to detect and correct errors. This enhancement has resulted in marked improvement in the error rate and greater confidence in the validity of the potential termination amount. The percent terminated has shown steady improvement since 1986 as illustrated below.

Air Force Termination Data as of March of Each Year
(Dollars in millions)

	Total Computed Terminations	Errors Identified	Valid Potential Terminations	Percent Terminated
1986	$1.406	$ .730	$ .676	8%
1987	2.388	1.416	.973	13%
1988	.911	.198	.656	18%

8

The large amount of both computed and valid potential terminations in 1987 was due to a policy change which decreased war reserve materiel requirements.

The Air Force recognized the need for improved termination management and took the following actions:

1. A termination workshop was held, resulting in a number of procedural improvements. Interim letter guidance was disseminated, standardizing termination codes, establishing a uniform method for obtaining contract termination costs and directing that all items with a computed termination value in excess of $10,000 be reviewed quarterly, within 25 days of computation notice, for possible termination action.

2. In March 1988 the Air Force Logistics Command directed mandatory use of a computer software model to assist item managers in making economic termination decisions. Using various factors, the model weighs the cost to terminate a contract against the cost of continuing procurement.

These actions have resulted in notable improvements in the termination process. The guidance will be included in the revision to Air Force Logistics Command Regulation 57-4, scheduled for publication December 1989.

See comment 10.

With regard to the excerpts from Headquarters Air Force Logistics Command letters discussed by the GAO, the guidance was intended to address specific cases where termination was inadvisable and is not reflective of the Air Force general policy on contract terminations. The April 1986 letter, for example, was intended to prevent termination in the rare instance when the changes in variable safety levels were not driven by changes in the basic requirements data, such as demand rates, pipeline changes, etc. A very small number of items would fall into this category. The Air Force policy does and will continue to place emphasis on the importance of making timely and sound termination decisions based not only on economics, but also the logistics posture of the item and the weapon system it supports.

- **FINDING D**: **Materials Received Sooner Than Required**. The GAO found that a second procurement practice contributing to growth in unrequired stock items was due to overestimated procurement lead times for some of the Air Force items. The GAO explained

that procurement lead time is important, because it determines when an order must be placed--if the time is underestimated, inventories could run out; if the time is overestimated, items could arrive sooner than necessary. According to the GAO, it found that 5 of the 29 Air Force items it identified as having unrequired stock, also had overestimated procurement lead times. As an example, the GAO cited a July 1986, purchase of 251 transmitters valued, at $1.4 million. According to the GAO, the requirements computation used a total estimated lead time of 31 months, based on contractor estimates--but the actual lead time proved to be only 13 months. The GAO found that, mainly as a result of this factor, 212 transmitters, valued at $1.2 million, were in unrequired stock as of September 1987. The GAO cited a DoD response to a prior report it issued (OSD Case 6948), wherein the DoD agreed to limit early initiation of Air Force spares to 12 months. According to the GAO, it disagreed with only a 12 month limitation. The GAO considered the action inadequate to resolve the problems. In addition, the GAO stated it was concerned over the DoD view that the requirements system is self-correcting, since if incorrect, it could result in procurement of material that may not be used. The GAO further pointed out that, in February 1988 (OSD Case 7541), it found Air Force FY 1987 and FY 1988 buy guidelines did not contain a 12 month limitation--and could be interpreted as authorizing premature initiation. During its current review, the GAO found provisions in the FY 1989 Air Force buy guidelines and logistic center supplemental instructions encouraging early procurement initiation to meet budget obligation goals. Overall, the GAO concluded that the Air Force practice of routinely initiating purchase requests before the necessary procurement lead time results in premature inventory investment and unnecessary holding costs--as well as increased risks that material might become obsolete before it is used. (p. 6, pp. 36-38/GAO Draft Report)

Now on pp. 3, 27-29.

DOD RESPONSE: Partially concur. The Department agrees that overestimated lead times can contribute to growth in "unrequired" stock. The Department does not, however, agree with the GAO conclusions that Air Force spending guidelines may contribute to purchasing items earlier than needed.

Lead times are based on previous procurements or contractors' estimates and represent the best available information at the time of the computation of the requirement. If the time it takes to procure and deliver material does not

exactly match that previously experienced or predicted, the result will be too little or too much stock. The Department has an aggressive ongoing program to reduce lead times. A number of initiatives are underway, including increased emphasis on long-term multi-year contracting, streamlining pre-procurement screening actions, electronic data exchange, and implementation of a mechanized tracking system with goals for each segment of the process. As a result of these initiatives, the Air Force administrative lead times have decreased from 192 days in 1985, (the highest, attributed to the Competition in Contracting Act), to 168 days in 1988. These trends indicate that future additional improvements will be realized.

The Department does not agree that Air Force spending guidelines may contribute to purchasing items earlier than needed. As it has in responses to previous reports, the DOD continues to point out that the GAO improperly determined the point at which the material is needed. While the Air Force FY 1989 buy guidelines did not specifically address a 12-month limitation, the guidelines provided to the air logistics centers by the Air Force Logistics Command directed that execution be made utilizing the March D041 Central Secondary Item Stratification Deficit Listing. The deficit listing reflects the items that the requirements computational system has determined need to be procured within the current appropriated fiscal year. The computation bases the need for procurement on the point in time assets are required to be on hand. While actual deficits can fall any time within the fiscal year, the Department supports initiation of procurement documentation early within the fiscal year, since this promotes efficiency by providing the contracting community with the order quantities and due dates for material requirements. Using this information, the contracting personnel can organize their workload and ensure that major DOD policy objectives are achieved. If the Air Force executed as the GAO suggests, purchase requests for a given fiscal year would be initiated anywhere between October and September. Considering an average eight month administrative lead time, only about 25 percent of the funded requirements would be obligated within the actual appropriation year, if procurement documentation was initiated solely on the computed lead time date.

This issue was thoroughly evaluated in the DoD response to OSD Case 6948, and no new information has been provided to warrant a change in the DoD position. The Air Force will,

however, insure that future issuances of buy guidelines reflect the DoD policy on this issue.

- **FINDING E**: **Procurement Exceeded Economic Order Quantity**. The GAO reported that the DoD established the economic order quantity principle as a mathematical technique for determining the purchase quantity that will result in the lowest total cost for ordering and holding inventory to meet expected requirements. The GAO found that, for 3 of the 22 Navy items it identified as having unrequired stock, inventory managers procured consumable assets in excess of economic order requirements. The GAO cited a January 1988 GAO report (OSD Case 7355), in which it found that the practice of buying more than the economic order quantity contributed to the growing inventory of unrequired stock in the Navy. According to the GAO, at that time it recommended that the Navy not buy more than the economic order quantity, unless a larger procurement would result in quantity discounts that more than offset the additional holding costs. The GAO reported that the DoD disagreed with its recommendation, saying the Navy would, in the future, buy the economic order quantity for items with well established demand patterns--but would buy 1 to 2.5 years worth of items that it believes have stable or very stable demand. The GAO noted that the DoD (1) cited changes in contracting that could result in orders being placed weekly with as many as four buys in process at the same time and (2) also cited a 1986 study that concluded that buying under a 1-year policy would reduce total variable costs by 7 percent. In its rebuttal comments, the GAO indicated that it did not believe the cited reasons justified buying a year or more of stable-demand items, and that existing controls should prevent multiple buys in process. The GAO also pointed out that the study referred to by the DoD actually concluded that increasing the ordering quantity from 3 to 12 months would increase total variable costs by 7 percent, not reduce them. The GAO further cited an August 1988 Logistics Management Institute study that reached a conclusion similar to that of the GAO (and recommended that the Services eliminate the 1-year minimum order quantity, use the economic order quantity principle to determine order quantities, and override it only when larger quantities are cost effective). (pp. 6-7, pp. 38-40/GAO Draft Report)

Now on pp. 3, 29-30.

- **DOD RESPONSE**: Concur. The Department issued a policy memorandum on June 27, 1989, reestablishing the need to use Economic Order Quantity methods and precluding the use of arbitrary 12-month or

larger order quantity floors. The policy does, however, provide for overriding the computed Economic Order Quantity when specific analysis supports an alternative quantity as more cost effective.

There is evidence that increased quantities allow for a better negotiating position for price and delivery, particularly in the extremely competitive electronics industry. The recent Navy approach has been to exceed the computed Economic Order Quantity only for items with stable or increasing demand and for known special program requirements.

There are a number of procurement initiatives underway to utilize more Indefinite Delivery Type Contracts for long term support; in these vehicles, a two to three year requirement may be used in order to negotiate the best deal and increase competition for the order. If quarterly orders are then placed against the contract, the investment and holding costs of the material will be minimized. The increased requirement may be considerably larger than the Economic Order Quantity, but will provide better and cheaper long term support. This is particularly true for material with stable or increasing demand.

The GAO statement regarding the 1986 Fleet Material Support Office study is correct. The study did conclude that a 1-year buy policy would increase total variable costs by 7 percent. The Department acknowledged this fact in its April 28, 1988, response to a previous GAO Report (OSD Case 7355). This correction does not, however, alter the Department position that the recommended order quantity (derived from Economic Order Quantity models) can, and should be, overridden in those instances where it is beneficial.

- **FINDING F**: **Efforts To Improve Inventory Reports**. The GAO identified several ways the DoD is attempting to improve its inventory reports. The GAO reported that an Office of the Secretary of Defense (OSD) study, completed in February 1989, found numerous weaknesses in existing reports. According to the GAO, OSD officials hope to improve the reporting process so that all components can use the same cut off date to meet the December 31 inventory reporting date. With regard to the Air Force, the GAO reported that, prior to 1987, due to limitations in the automated requirements system, air logistics centers could not correct errors in the stratification data used to prepare the annual inventory report. The GAO found that, in September 1987

(for the first time), the Air Force was able to rerun its stratification reports after correcting and validating the data--by means of a new automated requirements data base. The GAO pointed out that the Air Force Logistics Command's first attempt at eliminating errors in the report resulted in reductions of both required and unrequired inventory. The GAO also found, however, that despite these efforts, file maintenance and system errors still occur. As an example, the GAO observed that, of the 40 Air Force items it selected, 7 had been incorrectly reported in the unrequired stock.

The GAO also observed that the Navy follows a similar process of validating, correcting, and restratifying its inventory before preparing the annual inventory report, but is also continuing to experience system errors. In this regard, the GAO reported that 3 of the 25 Navy items it selected had been erroneously reported in unrequired stock. (p. 5, pp. 42-42/ GAO Draft Report)

Now on pp. 3-4, 33-34.

DOD RESPONSE: Concur. Although there are occasional errors in categorization, such as the three observed by the GAO in the draft report, the Navy strives to identify those items with erroneously categorized inventories to ensure the most complete and accurate inventory reports are prepared. Extensive review efforts are undertaken to ensure the accuracy of all items stratifying as high value, whether in long supply or as a potential reorder.

With respect to the Air Force, the Department agrees there were previously large errors in the data. The ability to correct errors afforded by the Requirements Data Bank has greatly improved Air Force inventory reporting. While the mechanical error detection process is better, accurate inventory still depends on factual incoming data. Because data from the 19 systems that feed the recoverable requirements computation are not always reliable and result in inaccuracies in the inventory report, the Air Force is implementing a front-end edit on the data before it gets into the computation. The program will mechanically screen data fields from the systems feeding the D041 system to identify variances from previous inputs. Products from this edit run will then be reviewed by requirements analysts at the air logistics centers to detect errors, program anomalies and trends. Programming for the edit has been completed and testing should be accomplished by December 31, 1989. Implementation is

scheduled to be complete in time for the March 31, 1990 computation cycle.

Another improvement to the inventory reporting function is the assignment of dedicated analysts at the Air Force Logistics Command to perform on-going, in-depth analysis of requirements and inventory. These personnel will be analyzing the inventory values, to include growth trends by category, retention by weapon system, ratio of serviceable to unserviceable, effects of policy decisions on the inventory, etc. This function is scheduled to be in place by December 1989.

- **FINDING G: OSD Inventory Reporting Initiatives May Impede Control Of Unrequired Stock.** The GAO found that proposed changes by both the OSD and the Air Force would show some unrequired inventory as required. According to the GAO, the OSD is considering actions to add (1) a third year of requirements to inventory reports, (2) requirements to cover quantities exceeding requirements if purchased to obtain discounts, and (3) requirements to cover life-of-type buys (purchases made to ensure future availability of parts when faced with the loss of a supplier). The GAO explained that, by adding an additional year of requirements to the existing 24 month requirements forecasting period, the OSD plans to reclassify, as required stock, assets currently unrequired--because they are not projected to be required until the year following the budget year or more than 24 months in the future. The GAO further noted that the OSD would also reclassify, as required stock, assets that were purchased over computed requirements--because it was in economically in the best interests of the Government. The GAO concluded that the DoD efforts to reclassify unrequired stock to required stock could be counterproductive. The GAO acknowledged that it may be useful to recognize stocks were obtained by intent (even if not currently required). The GAO concluded, however, that the DoD efforts may mask the need to address the growth in unrequired stock and could reduce the quantity of unneeded on order items eligible for termination. The GAO further concluded that less visibility over DoD inventories would impede efforts of policymakers and managers to identify and address problems contributing to growth in unneeded items. According to the GAO, these officials will not know the extent of unrequired stocks if the OSD implements policies that would include such purchases among required stocks. (pp 7-8, pp. 44-45, pp. 50-51/GAO Draft Report)

Now on pp. 3-4, 34-35.

DOD RESPONSE: Nonconcur. The objective of the changes the DoD is making is to provide greater visibility of the true nature of the requirements, not less visibility. The DoD chaired a meeting of senior logistics managers and technical experts in August 1988, to identify changes needed in the DOD policy on inventory stratification (contained in Department of Defense Instruction 4140.24). This initiative was designated the DoD Stratification Improvement Program. During the meeting it was agreed by all the Services that a major revision of the stratification process was required to: (1) support weapon system management concepts; (2) address the requirement for a biennial budget; and (3) provide improved management information to evaluate inventory trends. One of the specific changes required was to add an additional year's worth of requirements to the Approved Force Acquisition Objective to allow the stratification horizon to extend to the second year of a two-year budget. The plan to do this provides for separate identification of the additional requirements on the stratification displays. Contrary to the GAO statements, the net effect of this is to provide more, rather than less, information to managers and decision makers. There is no masking the effects of this action--it is clearly identified and provides a better portrayal of the inventory and the requirements upon which it is based.

- FINDING H: Air Force Inventory Reporting Initiatives May Impede Control Of Unrequired Stock. The GAO reported that, in April 1988, Air Force Headquarters directed the Air Force Logistics Command to increase the Approved Force Acquisition Objective, and the criteria used to identify unneeded items on order for potential termination. The GAO found that in response to this direction, the Command (1) temporarily authorized inventory control points to manually add items to stock requirements, in order to reclassify unneeded stock on order to required stock if personnel decided not to terminate the order, and (2) is considering adding an additional year of requirements to its automated requirements determination system in order to reduce the number of orders for potential termination. The GAO reported that various concerns were raised over the first initiative--and its use was cancelled in November 1988. With regard to the second initiative, the GAO reported that the Command plans to test the change manually and, if it substantially reduces reports of unneeded assets on order, to then implement the change at its air logistics centers. The GAO also reported that Air Force Headquarters reclassified assets that, in 1987, were believed to be uneconomical to repair as

Now on pp. 3-4, 34-36.

unstratified (in transit) stock and plans to report them, as required, in the future. The GAO pointed out that such stock were previously identified as potential excess. The GAO acknowledged that separately identifying the reasons that unrequired stocks were obtained can be useful. As with the OSD inventory reporting initiatives, however, the GAO concluded that the Air Force efforts to reclassify unrequired stock to required could be counter-productive and may mask the need to address the growth in unrequired stock and reduce the quantity of unneeded on order items eligible for termination. (pp. 7-8, pp. 45-48, pp. 50-51/GAO Draft Report)

See comment 11.

DOD RESPONSE: Partially concur. The Air Force did direct the Air Force Logistics Command to evaluate the feasibility of extending the Approved Force Acquisition Objective/Termination Point in the requirements computation. Since the budget is based on a two year time span, the termination point currently falls in the middle of the budget period; hence the risk of terminating an item one year and reprocuring it the next. Extending the termination point by an additional year would make the computation match the budget process and would preclude perturbations and turmoil in spares procurement (e.g., minimize buy, terminate and buy-again actions for the same item). If the evaluation proves that an additional year of requirements inclusion in the termination requirement does not solve the perturbation problem, it will not be implemented. If it proves feasible, it will be added to the Requirements Data Bank baseline and implemented in December 1993.

See comment 12.

The Air Force use of a termination "additive" to the requirements computation did not emanate from the Air Force guidance on the extension of the termination point, but rather was an effort to conserve resources. The technique was used to preclude continual review of repetitive termination notices on items for which conscious, documented decisions had already been made that termination of procurement was not in the best interest of the government. It was not an attempt to reduce unneeded stock, since decisions had been made that the inventory would be required. Because of the way these actions were coded, their status remained visible in the requirements computations at all times. This action did cause the items to stratify as required inventory; however, in addition to the perception of an integrity problem, the additive caused unnecessary work for item managers and created other problems in the computation. For these

reasons, the use of the additive was discontinued in November 1988.

The issue regarding the classification of assets will be resolved consistent with the changes made through the DoD Stratification Improvement Program. The policy will be promulgated by December 1990.

- **FINDING I**: **Growth In Air Force Required Stocks Beyond Wartime and Current Year Needs**. The GAO found that the inventory available to satisfy requirements beyond the current year has grown more than other requirements--rising from $1.3 billion in 1980 to $6.6 billion in 1988. The GAO reported that, as a result of this large growth, the aircraft parts inventory held for budget year demands grew to about 33 percent of the total aircraft parts required inventory in 1988. In addition, the GAO found that unrequired stocks held in an economic retention category for future peacetime needs beyond the budget year grew from $0.4 billion in 1980 to $3.2 billion in 1988. According to the GAO, the Air Force attributed the growth to increases in procurement lead times, making it necessary to project and buy for requirements further into the future to maintain an adequate level of support. While acknowledging that increased procurement lead times necessitate ordering items sooner, the GAO observed that, if lead times are over estimated, items could arrive sooner than necessary. The GAO further observed that the large growth of Air Force required peacetime stocks for use beyond current year operations can also increase the risk of reduced demand or obsolescence before the items are used. The GAO concluded that many of the problems that have caused growth of unrequired inventories have also contributed to inventory growth in required stocks beyond wartime and current year requirements, and could result in higher levels of future unrequired stocks. (p. 8, pp. 48-49, p. 51/GAO Draft Report)

Now on pp. 4, 37-38.

DOD RESPONSE: Partially concur. Although the GAO figures are correct, the statements are misleading, because the assets portrayed against budget year demands are only "applied" in the stratification process and may not necessarily be used to fill the requirement shown. The available assets are applied to requirements in the order in which they appear on the stratification report. For example, assets are applied to budget year demands before current year safety levels, pipelines, etc. Therefore, it is incorrect to assume that on hand assets applied

See comment 13.

to budget year demands truly represent stock not needed in the current year. The Department does not, therefore, consider the comparison of assets applied to budget year requirements in the central secondary item stratification report to be a valid indication of growth in required stocks.

See comment 14.

The GAO does not recognize that current on-hand assets (with the exception of assets that are condemned) are used on a recurring basis, year after year. Most items have been in the inventory for years. The whole concept of investment items is that an asset will be used until it fails; it will then be repaired and placed back in the inventory to satisfy recurring needs. Procurement of investment items is generally for assets needed to support increased pipelines and to replace condemnations, not to satisfy the recurring yearly demands.

See comment 15.

The GAO incorrectly implies that increased lead times caused the Air Force to buy stocks for economic retention. The Department does not budget for, or buy assets beyond, the computed budget year requirements, except in those cases where larger quantities are intentionally purchased for price breaks, or when life-of-type buys are made from diminishing sources. Items are budgeted and procured in time to consider the most accurate lead time information available. When lead times are less than estimated or than previously experienced, the result could be stock temporarily in economic retention. By definition, economic retention stock is held to support peacetime requirements for items with reasonably predictable demands. In most cases, this stock is utilized. The Department agrees that some of the same problems could contribute to the growth of both required and "unrequired" stock; however most of the growth in "unrequired" stock is caused by force modernization, e.g. weapon system phaseout, and modifications, coupled with the DoD retention policy to hold the items. By viewing a total stratification report, visibility of the individual item or weapon system asset stratification is lost. In reality, most of the assets appearing in the retention and excess ("unrequired") portion of the summary stratification are for items applicable to obsolete or phasing out weapon systems, while the majority of assets for active items/weapon systems are within the required category.

See comment 6.

- **FINDING J**: **Impact Of Air Force Guidelines On Earlier Purchases**. The GAO found that, prior to FY 1986, Air Force policy provided

that current year funds could only be used to buy current year requirements. The GAO found, however, that in response to OSD concerns that the Air Force had not fully obligated available funds, the Air Force changed its funding policy in October 1985, so that any available spares funds could be obligated to satisfy current or future year funded requirements. The GAO reported that, in late 1987, the Air Force Logistics Command was about $898.4 million behind in its planned obligations. According to the GAO, the Air Force said the obligation shortfall occurred because FY 1985 funds were used to satisfy FY 1987 requirements and that funds for 1987 were, therefore, no longer needed. The GAO reported that, in January 1988, the Command advised the air logistics centers that because of limited funding, the FY 1988 budget goal for obligating current year funding had increased from 92 percent to 100 percent--and that the large unobligated balances in FY 1986 and FY 1987 could not be tolerated. The GAO observed that these guidelines stress the importance of meeting budget obligation goals and encourage early initiation of purchase requests and the use of multiyear contracts and quantity discount buys. The GAO further observed, however, that such guidance can also result in buying items before they are needed. As an example, the GAO cited an Air Force procurement, made under a multi-year contract, where the purchase was made (1) in excess of computed requirements and (2) used 1984 funds in the last year of their availability--in order to use the funds before they expired. According to the GAO, there is now little chance that the unrequired stocks on hand will ever be used and the Air Force decision is not likely to be cost effective. The GAO concluded that the Air Force spending guidelines may contribute to earlier purchases of items. The GAO acknowledged that some level of unrequired inventory must be viewed as a cost of doing business. Overall, however, the GAO concluded that the proposed changes cause serious concern, because they add to existing pressures to raise required inventories well above the levels actually needed. (pp. 49-51/GAO Draft Report)

Now on pp. 38-39.

DOD RESPONSE: Nonconcur. The decision to change Air Force policy regarding year of money/year of requirement was a thoroughly staffed Air Force/OSD decision, based on the content and cumulative nature of the spares budgets, not in response to DOD pressure as the GAO states. The policy letter stated, in part, "it is impractical, and legally unnecessary, to attempt to link specific fiscal year funds with items that are being bought ... bona fide needs are those items that will be ordered during

See comment 16.

See comment 17.

See comment 18.

the three-year period of availability of the funds ...." Additionally, the GAO inaccurately states that "available spares funds could be obligated to satisfy current or future year funded requirements." Spares funds (assuming FY 1989 is the current year) are available to satisfy FY 1988 and FY 1987 requirements. FY 1989 funds will only be available for FY 1990 and FY 1991 when FY 1991 becomes the current appropriated year.

Although the FY 1987 obligation amount reported by the GAO is correct, the reasons (attributed to Air Force personnel) are incorrect. Obligations during FY 1987 were somewhat slowed by a substantial amount of fallout generated during the definitization of FY 1985 undefinitized contractual actions. The GAO statement that "since FY 1985 funds were used to satisfy FY 1987 requirements, funds budgeted for FY 1987 were no longer needed" (again attributed to Air Force personnel) is totally inaccurate. Since the FY 1987 requirements funded with the FY 1985 fallout were unfunded FY 1987 requirements, there was never a case of funds budgeted for FY 1987 not being required. It should be noted that large unobligated amounts toward the end of a fiscal year are consistent with the overall pattern of spending, which is driven by the amount of time required to put items on contract. The Air Force Audit Agency conducted an audit (Project 7126123) at the end of FY 1987 to evaluate the effectiveness of internal controls over year-end spending for replenishment spares, and to determine whether purchase requests represented valid requirements. Final analysis indicated that the internal controls used to determine year-end spending were generally effective and were adequate to assure purchase requests represented valid requirements. The 100 percent FY 1988 obligation goal cited by the GAO was an internal Air Force Logistics Command goal and not an Air Force or OSD goal.

As stated in the DoD response to FINDING D, the Department still does not concur with the GAO conclusions that Air Force spending guidelines may contribute to purchasing items earlier than needed.

The procurement of an F100 engine duct segment is cited by the GAO as an effort to purchase stock in excess of computed requirements in order to utilize funds before they expired. The GAO concluded there is now little chance that the "unrequired" stocks of this item will ever be used. As discussed in the DoD response to FINDING B, these items are expected to be used by the

See comment 19

by the end of the engine's support period. This purchase was a legitimate expenditure of FY 1984 funds and was a cost effective decision

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RECOMMENDATIONS

Now on pp. 4, 30-31.

- **RECOMMENDATION 1**: The GAO recommended that the Secretary of Defense direct the Secretaries of the Air Force and the Navy to reconsider prior audit recommendations dealing with the matters discussed in the GAO report and promptly implement corrective actions, if they have not already done so. Specifically, the GAO recommended that the Secretaries of the Air Force and the Navy should review their policies on terminating orders for unneeded items at all levels to ensure they clearly support termination whenever practical. (p. 9, p. 41/GAO Draft Report)

  DOD RESPONSE: Concur. The Air Force and the Navy have reviewed their policies on terminating orders for unneeded items at all levels to ensure they clearly support termination whenever practical.

  As indicated in the DoD response provided to FINDING C, the Navy continues to make substantial progress in terminating orders for "unrequired" inventory and is planning to implement an automated program for contract terminations in the December 1989 timeframe. Achieving continued progress in this area is receiving high level attention under the Navy comprehensive Inventory Management Improvement Program.

  In response to a previous GAO report (OSD Case 7242), the Air Force has a strong program underway to improve termination management and has implemented a number of improvements (as outlined in the DoD response to FINDING C). The initiatives added to the termination process and the enhancements in automated data processing will ensure that the current trend reflecting improvement continues. The Department does not, however, plan to set arbitrary goals for amounts to be terminated. The DoD response to a previous GAO audit report (OSD Case 7541) stated that economics cannot be the sole factor in the decision process. Other logistics considerations, such as the

stability of demands, planned requirements, projected production plans for the next higher assembly, the item's supply position and the impact on force readiness require a thorough assessment before considering the economic trade-offs involved. Additional considerations such as the adequacy of technical data to reprocure the item in the future, expected long lead time and diminishing manufacturing sources must also enter in the decision. The Department will continue its emphasis on contract termination and terminate orders when logical application of costs and requirements are economical and feasible.

- **RECOMMENDATION 2**: The GAO recommended that the Secretary of Defense direct the Secretaries of the Air Force and the Navy to reconsider prior audit recommendations dealing with the matters discussed in the GAO report and promptly implement corrective actions, if they have not already done so. Specifically, the GAO recommended that the Secretary of the Air Force should stop the practice of initiating purchase requests earlier than required. (p. 9, p. 41/GAO Draft Report)

Now on pp. 4, 30-31.

DOD RESPONSE: Nonconcur. The Department previously non-concurred with this recommendation in response to a 1986 GAO report (OSD Case 6948), indicating that it supports the initiation of procurements early in the fiscal year on items in a buy position during that fiscal year, rather than waiting for the exact lead time from need point reflected in the requirements computation. The Air Force contracts for spare parts specify a delivery date based on need as determined by the requirements system or by the item manager, and early initiation of the procurement document has no effect on the requested delivery date. (See also the DoD response to FINDING D.)

- **RECOMMENDATION 3**: The GAO recommended that the Secretary of Defense direct the Secretaries of the Air Force and the Navy to reconsider prior audit recommendations dealing with the matters discussed in the GAO report and promptly implement corrective actions, if they have not already done so. Specifically, the GAO recommended that the Secretary of the Navy should stop the practice of buying more than the economic order quantity, unless the quantity discount more than offsets the additional holding costs. (p. 9, p. 41/GAO Draft Report)

Now on pp. 4, 30-31.

DOD RESPONSE: Partially concur. The Department concurs that the Economic Order Quantity methodology should be the baseline for

See comment 20.

determining target order quantities. This policy was re-emphasized by the OSD in a memorandum sent to the Services in June 1989. (See also the DoD response to Finding E.) The Department disagrees, however, that the Economic Order Quantity should always be used, excluding the consideration of other factors. The following facts must also be considered:

- The existing Economic Order Quantity model does not consider price breaks often associated with procurement of larger quantities. Procuring quantities over the Economic Order Quantity is a prudent practice for items with stable or increasing demand.

- Strict adherence to the existing model may result in numerous requests in the pipeline simultaneously and place a burdensome workload on an already constrained inventory manager and contracting personnel work force.

- **RECOMMENDATION 4**: The GAO recommended that the Secretary of Defense separately identify unrequired inventory that was obtained in the best interests of the Government--in order to ensure that unrequired inventory is properly classified. (p. 9, p. 52/GAO Draft Report)

Now on pp. 4, 40.

DOD RESPONSE: Concur. This capability is planned for within the DoD Stratification Improvement Program initiative that is currently being developed under the leadership of the OSD. The new policy will be promulgated by December 1990.

- **RECOMMENDATION 5**: The GAO recommended that the Secretary of Defense separately identify those assets which are uneconomical to repair, and modify DoD regulations to ensure consistent treatment by the Services. (p. 9, p. 52/GAO Draft Report)

Now on pp. 4, 40.

DOD RESPONSE: Concur. The Stratification Improvement Program addresses this requirement and provides for consistent treatment of these assets in the proposed change to the DoD stratification process. The new policy will be promulgated by December 1990.

- **RECOMMENDATION 6**: The GAO recommended that the Secretary of Defense direct the Secretary of the Air Force to cancel efforts to increase the Approved Force Acquisition Objective to include an additional year of requirements--because such a change would mean that inventory managers would not have to consider terminat-

Now on pp. 4, 40.

ing orders that could have been terminated under current criteria. (p. 9, p. 52/GAO Draft Report)

DOD RESPONSE: Nonconcur. The GAO has improperly characterized DoD efforts to improve the stratification process as a means of reducing inapplicable inventory and avoiding contract terminations. This is incorrect and ignores the fact that the stratification process has not been updated in over twenty years, and that it does not fully reflect current DoD logistics policies and concepts. The proposed changes in the stratification process will support the DoD commitment to weapon system management; allow the Department to comply with new budgeting requirements (biennial budgets); provide a more accurate portrayal of inventories; and provide a credible auditable source of management information on DoD requirements and inventories. The revised stratification process will also separately identify all additions to the Approved Force Acquisition Objective on the stratification displays, thereby allowing full visibility of the impacts of the changes. This will provide management and the GAO with an improved capability to look at the inventory from several perspectives. The Department agrees that if the Approved Force Acquisition Objective is extended by one year, inventory managers would not consider the same termination orders that would be considered under the current criteria. The way the computation and the budget process are currently structured, (with the termination point in the middle of the budget period), the DoD Components could conceivably be budgeting for items that also compute as potential terminations. The revised stratification process will preclude this from happening and will allow attention to be focused on terminating on-order material that exceeds forecasted needs.

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The following are GAO's comments on DOD's letter dated November 1, 1989.

GAO Comments

1. We reported in July 1988 (Defense Inventory: Growth in Secondary Items, GAO/NSIAD-88-189BR, July 19, 1988) that the proportion of unrequired stocks grew from about one quarter of the total in 1980 to one third in 1987. We believe the change in the ratio is significant.

2. These factors were also noted in GAO/NSIAD-88-189BR.

3. The impact of material returns was among the factors considered in our tests and could have affected our selected items. The factor did not arise as a separate major cause for aircraft parts.

4. Discussions with DOD and Air Force supply personnel and our analyses did not identify disposal policies as a major causal factor. In the three such cases in our sample, item managers stated they knew of no reason why the items should not have been considered for elimination. Thus, recent changes in disposal policies were not identified as a factor even where disposable items arose in our sample.

5. Price differences were noted in GAO/NSIAD-88-189BR. The current report notes that over half the unrequired aircraft parts needed repair, also indicating overstatement of the value of such parts. GAO also has other work underway that addresses the Air Force's financial statements and financial controls over its inventory.

6. The DOD statements that "much of the stock will be used" and "In most cases, this stock is utilized," appear inconsistent with DOD's subsequent position in the response. For finding I, DOD states that "In reality, most of the [unrequired] assets . . . are for items applicable to obsolete or phasing out weapon systems." We would expect that it would be difficult to use unrequired stock for obsolete and obsolescent systems, because several years' worth of required inventories must be used before total stocks, including unrequired items, are used up. We found no DOD analyses showing how much of the stock in the unrequired categories had been used in the past or will be used in the future. Also, premature investment of funds should be avoided whenever possible, regardless of whether stock is eventually used.

7. We do not extrapolate the results to the entire inventory. The population was defined to include items for which data was maintained at the

time of our review. The results are significant in themselves because they focus on items on which actions were taken in the previous 2 years. The 40 Air Force items we examined accounted for about 50 percent in value of the items for which the data needed for analysis were available. The second quote cited by DOD was not in the draft report.

8. We believe that all items held as spares should be counted, including replacements for items that originally came with end items. Not counting such items would mask an area of unnecessary inventory growth.

9. The duct segments are reflected on current Air Force records as required stock because their system considered the last purchase of about 73,000 items to represent 1 year of demand, in spite of far lower historical demand and further recent declines in demand. As discussed further below, the computed requirements are clearly inconsistent with actual experience, and actual experience as adjusted for declining use should be the basis for requirements.

- In addition to the assumed 1-year demand, the Air Force's system further added requirements for 2 more years of routine operating stocks and for procurement lead times to arrive at an approved force acquisition objective of 290,976 items and an economic retention level of 1,091,160 items. (The duct segment has been coded by the inventory manager to prevent buying toward the computed requirement.)
- The demand for the 3 months ending June 30, 1989, totaled 2,341 units (368 for Air Force needs, 500 provided to a contractor, and 1,473 for foreign military sales). The previous quarter's demand totaled 1,061.
- The low recent use and continued phase-out of the supported end item indicates that fewer duct segments will be needed than the 12,000 per year estimated by DOD in their response. However, even using DOD's estimate, the Air Force's new approved force acquisition objective equates to over 24 years of stock, and the authorized retention levels equate to another 90 years. As stated by DOD, the item is to be phased out of the U.S. inventory in 1992.
- Historical demand as modified for known declines would be appropriate even though the Air Force transferred the duct segment from the reparable category to consumable. Because the Air Force had always replaced rather than repaired the item, its demand as a reparable would be equivalent to its demand as a consumable.

10. It is not possible to accurately measure how such guidance affects the Air Force's general policy. However, these are examples of actual guidance that affected our selected items.

11. We do not agree that extending the termination point would make the requirements computation match the budget process or preclude turmoil in spares procurement. We agree that a 2-year budget can assist in estimating future purchases. However, we do not believe that a 2-year budget should be used as a justification to order and accept items not yet needed. Extending the termination point would reduce, not preclude such cancellations. The benefits of minimizing such cancellations must be weighed against the costs of buying items sooner than necessary and the increased risk of obsolescence.

12. The decisions were not that items would be required; they were decisions to buy items sooner than called for by the requirements computation.

13. We evaluated inventories based on DOD's justification. DOD's comment that items might actually be used for a different purpose or in a different order than shown in the stratification does not lessen our concern. For example, if the requirements cited by DOD were stratified before the budget-year stocks, a similar concern would arise about the degree to which stocks were actually on hand for a category that should still be on order.

14. We recognize that reparable assets will be fixed until condemned. DOD's distinction between replacing condemnations and satisfying recurring yearly demands is primarily semantic. Both types of demand recur as a function of failures.

15. Our discussion responds to Air Force officials' explanations for the growth in stocks held for use beyond the current year. We agree with DOD that proper consideration of lead time should not result in unrequired stock.

16. DOD's statement that "FY 89 funds will only be available for FY 90 and FY 91 when FY 91 becomes the current appropriated year" is not correct. Availability of 1989 funds for fiscal year 1990 can occur before fiscal year 1991 becomes the current year. Therefore we made no change in our original statement.

17. The written DOD response to the 1988 GAO report took exception to the suggestion that there was a rush to execute the budget, but otherwise concurred with the finding.

18. We modified the report to state that funds were no longer needed for the purposes originally justified. We recognize that the funds might be used to meet revised requirements or to meet requirements in later fiscal years.

19. We do not agree that the available data supports the Department's belief that this purchase was cost effective (see comment 9). To recognize the possible eventual depletion of stocks through foreign military sales, we modified the report to state that there was little chance the stocks would be used before the supported item was phased out of the U.S. inventory.

20. Our draft recommendation did not exclude consideration of other factors. Our recommendation was that the other factors should be specifically justified in each case. However, we have clarified our recommendation to more clearly recognize factors other than quantity discounts.

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