United States General Accounting Office

GAO

Report to the Honorable Tom Harkin, U.S. Senate

May 2003

DEFENSE INVENTORY

Overall Inventory and Requirements Are Increasing, but Some Reductions in Navy Requirements Are Possible

G A O

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GAO-03-355

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Highlights

Highlights of GAO-03-355, a report to the Honorable Tom Harkin, U.S. Senate

Why GAO Did This Study

Changes in the Department of Defense's (DOD) mission can lead to changes in inventory requirements, which, in turn, determine the size of DOD's inventory. Since 1990, GAO has identified DOD's management of inventory as a high-risk area because levels of inventory were too high and management systems and procedures were ineffective. Furthermore, DOD has attributed readiness problems to parts shortages. In this report, GAO (1) provides information on changes in and make up of the department's inventory and (2) analyzes changes in inventory requirements, focusing on the Navy.

What GAO Recommends

Because the long-standing logistical problems associated with inventory excesses and shortages have been addressed in prior reports as well as in GAO's *Performance and Accountability Series* reports, GAO is not making any additional recommendations in regard to those issues. However, to improve the accuracy of the Navy's inventory requirements, GAO recommends that the Secretary of Defense require the Navy to ensure that the most current data available for computing its administrative lead time requirements are being used. DOD generally concurred with GAO's report, and stated that the Navy formally updated its system to begin using the most current data available to compute administrative lead time

www.gao.gov/cgi-bin/getrpt?GAO-03-355.

To view the full report, including the scope and methodology, click on the link above. For more information, contact William M. Solis at (202) 512-8365 or solisw@gao.gov.

What GAO Found

DOD reported a $5.6 billion increase in inventory on hand and a $1.7 billion increase in inventory on order between September 30, 1999, and September 30, 2001. The reported inventory increases were primarily due to the Navy reporting aviation parts held by ships and air squadrons that were previously not reported and to overall DOD inventory requirements increases. In addition, GAO identified large imbalances in the department's inventory; as of September 30, 2001, over 1.7 million items had $38 billion of inventory that exceeded the items' current inventory operating requirements of $24.9 billion (see table below). At the same time, there were 523,000 items that needed an additional $10.4 billion of inventory to meet the items' current inventory operating requirements.

Generally, inventory increases are the result of increases in inventory requirements. DOD's overall inventory requirements increased by $10.6 billion, or 26 percent, between the end of fiscal years 1999 and 2001, with some of the Navy's requirements being overstated. The Navy was responsible for the largest dollar increase, $4.7 billion of the $10.6 billion increase. A large part of the Navy increase, $3.4 billion, was attributable to a change in the way the Navy accounted for aviation parts held by ships and air squadrons. The remaining Navy increase was attributable to a variety of reasons, such as price increases; increased demand and item wear-out rates; and, in some cases, inaccurate data. Also, since 1997 the Navy has reduced the amount of administrative lead time it takes to place inventory orders (the period between when the need to replenish an item through a purchase is identified and when a contract is let), yet it has not formally updated the data used to compute those requirements. For example, the Navy reduced the administrative lead time for medium-sized sole-source contracts for repairable items from 200 days to 130 days, but it did not recognize the reduction in its requirements computations. As a result, those requirements are inaccurate and overstated.

Value of DOD's Inventory On Hand and On Order for Items That Had Too Much Inventory by Military Component as of September 30, 2001

Dollars in billions

Military component	Inventory satisfying requirements	Inventory exceeding requirements
Army	$2.8	$3.7
Navy	7.3	8.8
Air Force	10.5	19.4
Defense Logistics Agency	4.3	6.1
Total	**$24.9**	**$38.0**

Source: DOD.

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Abbreviations

DOD	Department of Defense
GAO	General Accounting Office

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G A O
Accountability * Integrity * Reliability

United States General Accounting Office
Washington, DC 20548

May 8, 2003

Dear Senator Harkin:

The Department of Defense maintains a supply of spare and repair parts in order to keep its equipment operational for war- and peace-time missions. The management of this inventory is especially critical as the department and the services are called upon for new missions relating to combating terrorism worldwide and protecting the homeland. Such changes in missions can lead to changes in inventory requirements, which, in turn, determine the size of the inventory.

This report, in response to your interest in the Department of Defense's inventory management, is one in a series on the department's management of secondary inventory—that is, spare and repair parts, clothing, medical, and other items that support the military's operating forces. Since 1990, we have identified the department's management of secondary inventory as a high-risk area because levels of inventory were too high and management systems and procedures were ineffective. While some improvements have been made, in January 2003 we reported that these conditions still existed and that over half of the department's inventory is not needed to satisfy current operating requirements.[1] Nevertheless, the department has attributed readiness problems to parts shortages. In response to your request, this report (1) provides information on changes in and make up of the department's inventory and (2) analyzes changes in inventory requirements, with a focus on causes of requirements changes derived from a sample of Navy inventory items.

To accomplish this review, we expanded on previously reported analyses[2] to cover inventory data from fiscal year 1996 through 2001 for the Army, the Navy, the Air Force, and the Defense Logistics Agency. We also analyzed inventory data as of September 30, 2001, to show the number of items that had more than or less than enough inventory to satisfy

[1] U.S. General Accounting Office, *Major Management Challenges and Program Risks: Department of Defense*, GAO-03-98 (Washington, D.C.: Jan. 30, 2003).

[2] U.S. General Accounting Office, *Defense Inventory: Status of Inventory and Purchases and Their Relationship to Current Needs*, GAO/NSIAD-99-60 (Washington, D.C.: Apr. 16, 1999).

requirements. We compared September 30, 1999, inventory requirements to September 30, 2001, inventory requirements for the military services[3] and the Defense Logistics Agency. We used data as of September 30, 2001, because that was the most recent end of fiscal year data available when we began our examination. We did not revalue the inventory that needs to be repaired to recognize the repair cost, and we did not value inventory that is to be disposed of at salvage prices. Also, our analyses did not include fuel, certain inventories held by units, and Marine Corps inventory. Fuel and inventories held by units are not stratified by requirement, and the Marine Corps inventory represents a small part of the universe. Because the Navy had the largest increase in inventory requirements during the period, we analyzed a sample of selected Navy inventory items to identify key causes of increased inventory requirements. We conducted our review from June 2002 through March 2003 in accordance with generally accepted government auditing standards. We provide the details of our scope and methodology in appendix I.

Results in Brief

The Department of Defense reported a $5.6[4] billion and a $1.7 billion increase in inventory on hand and on order, respectively, between September 30, 1999, and September 30, 2001. The on-hand and on-order inventories had increased to $69.8 billion and $9.9 billion, respectively. The reported inventory increases were primarily due to the Navy reporting aviation parts held by ships and air squadrons that were previously not reported and to overall Department of Defense inventory requirements increases. In addition, large imbalances in the department's inventory continue to exist. As of September 30, 2001, over 1.7 million items had $38 billion of inventory on hand or on order that exceeded the items' current inventory operating requirements of $24.9 billion. At the same time, 523,000 items needed an additional $10.4 billion of inventory to meet the items' current inventory operating requirements. In 1997, we reported that requirements decreases contributed to items having inventory on hand that exceeded current requirements.[5] Similarly, in 2000, we reported

[3] In this report, we refer to the Army, the Navy, and the Air Force as military services; when referring to the Army, the Navy, and the Air Force, and the Defense Logistics Agency, we use military components.

[4] In this report, all numbers over 1,000 are rounded. Inventory and requirement values are in current dollars.

[5] U.S. General Accounting Office, *Defense Logistics: Much of the Inventory Exceeds Current Needs*, GAO/NSIAD-97-71 (Washington, D.C.: Feb. 28, 1997).

that while inventory managers made inventory purchases that were supported by requirements, subsequent requirement decreases resulted in the purchases being in excess of requirements.[6] The current data indicate that many of these long-standing and systemic inventory management problems—which have been consistently identified as a high-risk area in our *Performance and Accountability Series* reports—continue to exist. Although the services are implementing management changes—initiatives to transfer the management and oversight of some of the department's inventory to parts contractors and to implement new inventory management systems—that will reduce the size of the department's reported inventory, these changes do not address the long-standing and systemic problems.

The department's overall inventory requirements increased by $10.6 billion, or 26[7] percent, between the end of fiscal years 1999 and 2001, with some of the Navy's requirements being overstated. The Navy was responsible for the largest dollar increase, $4.7 billion of the $10.6 billion increase. A large part of the Navy increase, $3.4 billion, corresponded to its reporting of requirements associated with aviation parts held by ships and air squadrons that were not previously reported. The remaining Navy increase was due to a variety of reasons, such as price increases; increased demand, inventory lead time,[8] and item wear-out rates that increased safety levels; and, in some cases, inaccurate data. Also, since 1997 the Navy has reduced the amount of administrative lead time it takes to place inventory orders, yet it has not formally updated the data used to compute those requirements. For example, the Navy reduced the administrative lead time for medium-sized sole-source contracts for repairable items from 200 days to 130 days, but it did not recognize the reduction in its requirements computations. As a result, those Navy requirements are inaccurate and overstated.

Many of the long-standing and systemic logistical problems associated with having both too much inventory for some items and not enough inventory for others have been addressed in our prior reports as well as in our *Performance and Accountability Series*, and we therefore are not

[6] U.S. General Accounting Office, *Defense Inventory: Process for Canceling Inventory Orders Needs Improvement*, GAO/NSIAD-00-160 (Washington, D.C.: June 30, 2000).

[7] In this report, percentages are rounded to the nearest whole number.

[8] The inventory lead time refers to the time elapsed between when the need to replenish inventory through a purchase is identified and when the order is received.

making any new recommendations in regard to those issues. We provide a list of those reports and past recommendations in appendix II. However, to improve the accuracy of the Navy's inventory requirements, we are recommending that the Secretary of Defense require the Navy to use the most current data available for computing its administrative lead time requirements. In commenting on a draft of the report, the department generally concurred with the report. With regard to our recommendation, the department noted that item managers use the most current data available to manually compute administrative lead time requirements when making management decisions for individual items and that in March 2003, the Navy formally updated its automated inventory system to begin using the most current data available to compute administrative lead time requirements for all items. This action to update the Navy's automated inventory system responds to our recommendation.

Background

The Department of Defense (DOD) refers to the amount of secondary inventory that it needs to have on hand or on order to support current operations as the requirements objective. The requirements objective includes inventory requirements for a reorder point and an economic order quantity. The reorder point is the point at which inventory replenishment will normally prevent out-of-stock situations from occurring. The economic order quantity is the amount of inventory that, when ordered and received, results in the lowest total cost for ordering and holding inventory.

When the combined total of on-hand and on-order inventories falls to or below the reorder point, an item manager generally places an order for additional inventory so that the total of on-hand and on-order inventories is equal to the requirements objective. Subsequently, on-hand inventory is used to satisfy customer requisitions that are received after the item manager orders new inventory, and thus the total of on-hand and on-order inventories is generally less than the requirements objective. Furthermore, an item's reorder point can move up or down over time and—depending on the item—may include one or more of the following:

- war reserves,[9]
- unfilled requisitions,

[9] War reserves are authorized to be purchased to facilitate fast mobilization in the event of war.

- a safety level to be on hand in case of minor interruptions in the resupply process or unpredictable fluctuations in demand,
- minimum quantities for essential items for which demand is not normally predicted (also referred to as insurance items),
- inventory to satisfy demands while broken items are being repaired,
- inventory to satisfy demands during the period between when the need to replenish an item through a purchase is identified and when a contract is let (also referred to as administrative lead time), and
- inventory to satisfy demands during the period between when a contract for inventory is let and when the inventory is received (also referred to as production lead time).

Because the reorder point provides for inventory to be used during the time needed to order and receive inventory and for a safety level, item managers are able to place orders so that the orders arrive before out-of-stock situations occur. Generally, an item manager orders an amount of inventory needed to satisfy both the reorder point requirement and the economic order quantity.

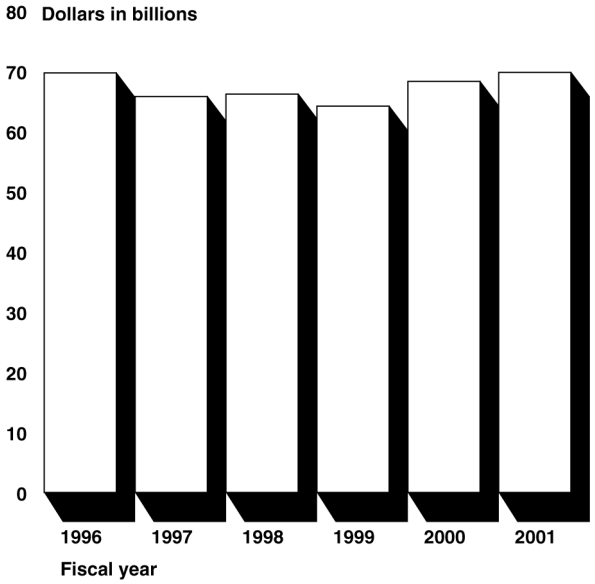
Inventory Growth Reverses Past Reductions

Between September 30, 1999, and September 30, 2001, DOD's inventory on hand increased by $5.6 billion and inventory on order increased by $1.7 billion, reversing past inventory reductions. These inventory increases were primarily due to the Navy reporting aviation parts held by ships and air squadrons that were previously not reported and to overall DOD inventory requirements increases. In addition, large imbalances in the inventory continue to exist. As of September 30, 2001, over 1.7 million items had $38 billion of inventory on hand or on order that exceeded the items' current inventory operating requirements of $24.9 billion. We also identified 523,000 items that did not have enough inventory on hand or on order to meet the items' current inventory operating requirements. While the services are implementing management changes that will reduce the size of DOD's inventory, long-standing and systemic inventory management problems continue to exist.

Inventory On Hand and On Order Has Begun to Increase

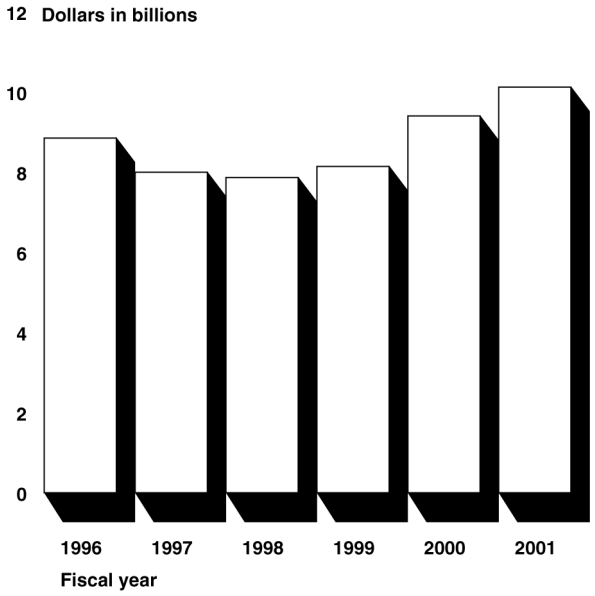
As of September 30, 2001, DOD's on-hand inventory was $69.8 billion, up $5.6 billion, or 9 percent, since September 30, 1999, and on-order inventory was $9.9 billion, up $1.7 billion, or 21 percent (see figs. 1 and 2).

Figure 1: DOD's Reported Inventory On Hand at the End of Fiscal Years 1996 through 2001



Source: DOD.

Figure 2: DOD's Reported Inventory On Order at the End of Fiscal Years 1996 through 2001



Source: DOD.

As indicated in figures 1 and 2, the period September 30, 1996, to September 30, 1999, shows a decline in on-hand and on-order inventories. During this period, inventory on hand dropped $5.5 billion and inventory on order dropped $0.7 billion.

Inventory Growth Caused by Reporting Changes and Requirements Increases

A Navy inventory reporting change and increased DOD inventory requirements contributed significantly to the growth in DOD's inventory. In 1996, the Navy began including aviation inventories held by ships and air squadrons in its inventory reports. Most of the change occurred in 1999 when the Navy began reporting parts held by aircraft carriers. Previously, the Navy considered these inventories as having been sold to ships and installations and not as reported inventory. Based on Navy records, we estimate that parts valued at about $3.3 billion[10] were added to the reported inventory as a result of the accounting change. A similar change by the Army resulted in an inventory increase of $0.3 billion between

[10] While requirements increased by $3.4 billion, on-hand inventory increased by $3.3 billion. On-order inventory also increased.

September 30, 1999, and September 30, 2001. These Navy and Army inventory reporting changes correspond to the reporting methods already in use by the Air Force.

In addition, overall DOD inventory requirements increased from $40.6 billion as of September 30, 1999, to $51.2 billion as of September 30, 2001. Increased requirements can affect an item's reorder point and economic order quantity. Consequently, an increase in requirements can affect when item managers place orders and the amount of inventory they purchase and can affect how much inventory is on hand. For example, if the requirements increase and enough inventory is not on hand or on order to satisfy the requirements, an item manager will place an order for additional inventory. When the additional inventory is received, inventory levels will also be increased.

Large Inventory Imbalances Still Exist

Since 1995 we have reported on imbalances in DOD's inventory, and our current work shows that these imbalances continue to exist.[11] Our comparison of September 30, 2001, on-hand and on-order inventories to the requirements objectives for 2.4 million items showed that 1.7 million items, or 70 percent, had inventory on hand or on order that exceeded the requirements, and 523,000 items, or 21 percent, did not have enough inventory on hand or on order to satisfy all of the requirements. The remaining 209,000 items, or 9 percent, had the right amount of inventory on hand and/or on order to satisfy all requirements.

The 1.7 million items had $22.1 billion of inventory on hand and $2.8 billion of inventory on order that satisfied requirements and an additional $36 billion of inventory on hand and $2.0 billion[12] on order that exceeded requirements (see table 1).

[11] U.S. General Accounting Office, *Defense Inventory: Shortages Are Recurring, but Not a Problem*, GAO/NSIAD-95-137 (Washington, D.C.: Aug. 7, 1995); GAO/NSIAD-97-71; and GAO/NSIAD-00-160.

[12] Based on Defense Logistics Agency data, we estimate that this amount includes about $400 million of Defense Logistics Agency inventory that was in transit. Files provided by the Defense Logistics Agency did not distinguish between on-order and in-transit inventories.

Table 1: Value of DOD's Inventory On Hand and On Order for Items That Had Too Much Inventory by Military Component as of September 30, 2001

Dollars in billions

	Inventory satisfying requirements		Inventory exceeding requirements	
Military component	**On hand**	**On order**	**On hand**	**On order**
Army	$2.6	$0.2	$3.7	$0.0[a]
Navy	7.0	0.3	8.8	0.0[a]
Air Force	10.1	0.4	18.8	0.6
Defense Logistics Agency	2.4	1.9[b]	4.7	1.4[b]
Total	**$22.1**	**$2.8**	**$36.0**	**$2.0**

Source: DOD.

[a] The amount is less than $50 million.

[b] The data provided by the Defense Logistics Agency did not distinguish between inventory on order and inventory that was in transit. We estimate that $400 million was in-transit inventory.

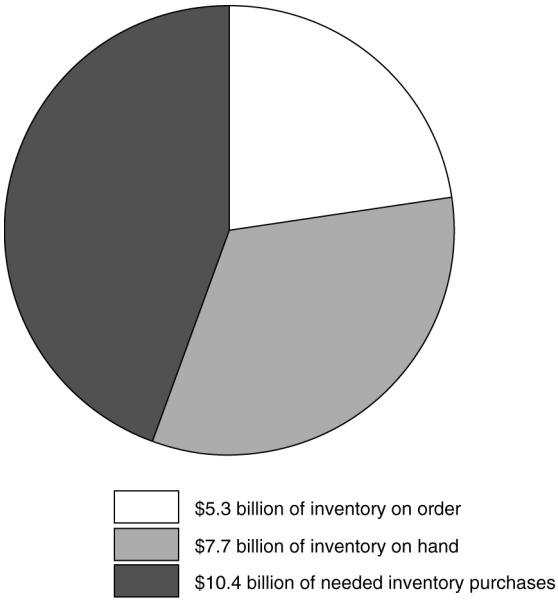
Overall, the amount of DOD's inventory that exceeds current operating requirements has decreased since 1996. On-hand inventory that exceeds current operating requirements decreased from $41.3 billion, or 59 percent, of on-hand inventory on September 30, 1996, to $36.1 billion, or 52 percent, of the $69.8 billion inventory on hand on September 30, 2001. During the same period, DOD's inventory on order that exceeds requirements decreased from $1.7 billion, or 19 percent, of on-order inventory to $1.6 billion, or 16 percent, of the $9.9 billion inventory on order. In 1997, we reported that requirement decreases contributed to items having inventory on hand that exceeded current requirements. Similarly, in 2000, we reported that while inventory managers made inventory purchases that were supported by requirements, subsequent requirement decreases resulted in the purchases being in excess of requirements.[13]

We identified 523,000 items that did not have enough inventory on hand or on order to satisfy all of the requirements that make up the requirements objective. The items had requirements valued at $23.4 billion that were partially satisfied by $7.7 billion of inventory on hand and $5.3 billion of

[13] GAO/NSIAD-00-160.

inventory that was on order (see fig. 3). The remaining $10.4 billion of requirements could be satisfied by purchases.

Figure 3: DOD Inventory On Order and On Hand and Needed Purchases for Items That Did Not Have Enough Inventory as of September 30, 2001



Source: GAO.

The amount of inventory exceeding or failing to meet inventory requirements indicates that many of the long-standing and systemic inventory management problems previously identified in our *Performance and Accountability Series* still exist.[14] We recommended in these reports that DOD address the long-standing weaknesses that limit the economy and efficiency of its logistics operations, including having too much inventory on hand and on order and shortages of key spare parts. Appendix II lists past reports and recommendations relating to DOD's long-standing inventory management problems.

[14] GAO-03-98.

Management Changes Will Reduce the Size of the Department's Inventory

The services are implementing management changes that will reduce the size of DOD's reported inventory and the amount of inventory that satisfies requirements. These changes include an initiative to transfer the traditional DOD inventory and technical support function to parts contractors and initiatives to implement new inventory management systems.

The services have initiatives that will transfer the traditional DOD inventory and technical support function to parts contractors. For example, as of September 30, 2001, the Navy had about 22,000 items that were managed by contractors. In some cases, Navy-owned inventory is being replaced by contractor-owned inventory. The Navy was paying $330 million for contractors to manage the 22,000 items, and the Navy planned to increase that amount to over $700 million for the next fiscal year. According to an official from the Office of the Secretary of Defense, contractor-owned inventories used to support military operations are not included in its inventory report. Consequently, the use of contractor-owned inventories will decrease the growth of DOD's inventory.

In addition, new inventory management systems that the military components are implementing may also affect the amount of DOD's reported inventory. For example, the Air Force's requirements for insurance items[15] decreased by $600 million between 1999 and 2001. According to the Air Force, the requirements decreased as a result of implementing a new requirements determination system that changed the way in which it computed those requirements. The Army, the Navy, and the Defense Logistics Agency are also in the process of developing new inventory management systems. However, the impact of the implementation of these new inventory management systems on the size of DOD's inventory is not yet known.

Although the initiatives described above will reduce the size of DOD's inventory, they do not address the long-standing and systemic problems that are limiting the economy and efficiency of the department's logistics operations.

[15] Insurance items are minimum quantities for essential items for which demand is not normally predicted.

Requirements Are Increasing, but Some of Navy's Are Overstated

DOD's overall inventory requirements increased by $10.6 billion, or 26 percent, between the end of fiscal years 1999 and 2001, with some of the Navy's requirements being overstated. The Navy was responsible for $4.7 billion of the overall $10.6 billion increase. A large part of the Navy increase, $3.4 billion, was due to the Navy reporting change we discussed in the previous section—that is, reporting aviation parts held by ships and air squadrons as inventory that were previously not reported. Consequently, the Navy also began reporting the associated requirements. The remaining $1.3 billion Navy increase was due to a variety of reasons related to inventory cost and usage. However, some Navy increases were caused by inaccurate data used to compute administrative lead time requirements, and as a result, those requirements are overstated.

Overall DOD Inventory Requirements Are Increasing

DOD's overall inventory requirements increased from $40.6 billion as of September 30, 1999, to $51.2 billion as of September 30, 2001, an increase of $10.6 billion, or 26 percent. Army, Navy, and Defense Logistics Agency inventory requirements increased significantly while the Air Force's requirements decreased (see table 2). The Navy was responsible for the largest share of DOD's overall inventory requirements increase, with $4.7 billion of the $10.6 billion inventory change.

Table 2: Comparison of Inventory Requirements by Military Component as of September 30, 1999, and September 30, 2001

Dollars in billions

Military component	1999	2001	Dollar change	Percent change
Navy	$10.5	$15.2	$4.7	44
Defense Logistics Agency	9.1	12.4	3.3	36
Army	6.0	9.1	3.1	52
Air Force	14.9	14.5	-.5	-3
Total	**$40.6**	**$51.2**	**$10.6**	**26**

Source: DOD.

Note: Numbers may not add due to rounding.

All requirements that comprise DOD's requirements objective increased except for unfilled requisitions and nonrecurring lead time requirements used by the Air Force. Requirements for safety levels, items held as insurance against outages; economic order quantities; and production lead time increased most significantly. Appendix III provides a detailed

comparison of the military components' inventory requirements as of September 30, 1999, and September 30, 2001.

Table 2 shows a decrease in the Air Force's requirements. According to an Air Force Materiel Command official:

- Higher congressional funding levels allowed the Air Force to buy and repair more of the items that were needed and reduce requirements for unfilled requisitions.
- Requirements for items held as insurance against outages decreased as a result of implementing a new requirements determination system that changed the way in which the Air Force computed those requirements.
- Requirements for war reserves decreased as a result of decreased need for F-16 fuel tanks.

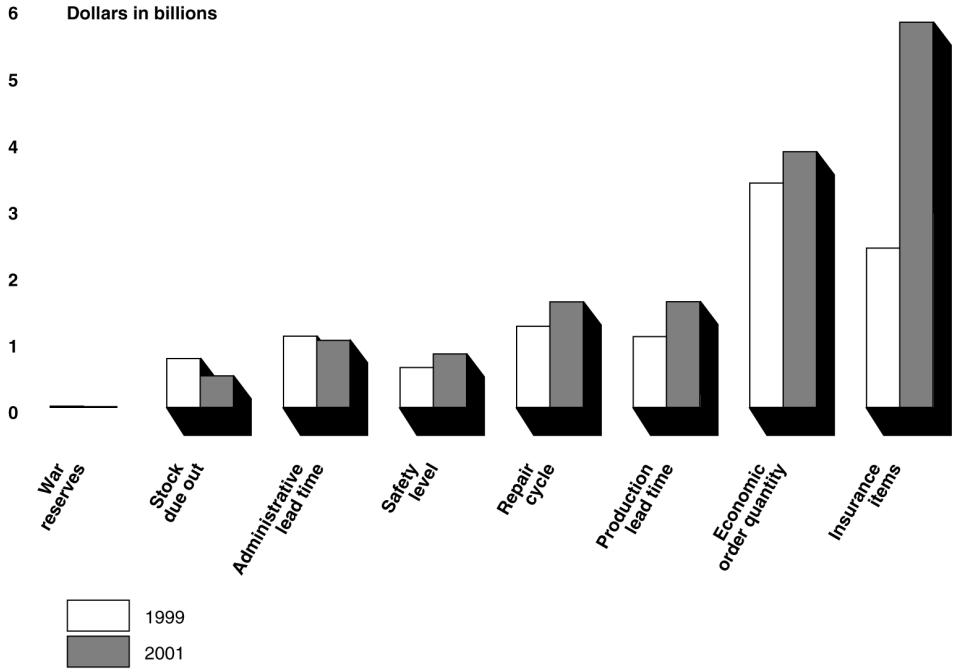
Navy Inventory Requirements Increased for a Variety of Reasons

Navy requirements increased $4.7 billion between September 30, 1999, and September 30, 2001, primarily due to a change in how the Navy accounts for aviation inventory requirements. The remaining Navy increase was due to such reasons as price increases and increased usage of items. Also, because the Navy has not updated the data used to compute administrative lead time requirements for some aviation items, those requirements are overstated.

Navy Requirements Increased $4.7 Billion

The Navy's $4.7 billion increase was not uniform across all requirements. Safety level, repair cycle, production lead time, economic order quantity, and insurance items requirements all increased by approximately $5.0 billion. However, requirements for Navy war reserves, unfilled requisitions, and administrative lead time actually decreased during this period, by $331 million (see fig. 4).

Figure 4: Changes in Navy Inventory Requirements between September 30, 1999, and September 30, 2001



Source: DOD.

A large part of the Navy's increase was due to a change in the way the Navy accounts for aviation inventory requirements for parts held by ships and air squadrons. According to the Navy, prior to 1996, aviation items that inventory control points[16] sold to customers onboard ships and at installations were not accounted for in its inventory. In 1996, the Navy began accounting for aviation items held by ships and installations by recognizing these requirements and assets in its inventory system and recording them as insurance item requirements. The Navy made the change in order to provide item managers visibility of the inventory and associated requirements and assets. Most of the increase in requirements and inventory occurred after 1999 when the Navy began to include aviation parts held on aircraft carriers. Generally, the change in accounting for these requirements resulted in a $3.4 billion increase in

[16] An inventory control point is responsible for the management of a group of items, including the computation of requirements and the purchase of inventory.

Navy insurance item requirements,[17] from $2.4 billion on September 30, 1999, to $5.8 billion on September 30, 2001.

To gain insight into why increases in the Navy's inventory requirements occurred, we compared the 307,000 items the Navy managed as of September 30, 1999, to the 309,000 items managed as of September 30, 2001, and identified 279,000 items that were managed in both years.[18] Overall, the value of the 279,000 items increased $4.2 billion between September 30, 1999, and September 30, 2001 (see table 3). Of this amount, $3.1 billion was the result of increased inventory requirement quantities and $1.1 billion was due to price changes. About 37,000 items accounted for $4.3 billion in inventory requirements increases, and another 37,000 items accounted for a $1.2 billion decrease in inventory requirements decreases. There was no change in inventory requirement quantities for the remaining 205,000 items during the same period of review.

Table 3: Comparison of Requirements for 279,000 Items Managed by the Navy at the End of Fiscal Years 1999 and 2001

Dollars in billions

Status of requirement quantity	Items	Change in requirement quantity	Change in price	Total change
Increased	37,000	$4.3	$0.8	$5.1
Stayed the same	205,000	NA	0.2	0.2
Decreased	37,000	-1.2	0.2	-1.0
Total	**279,000**	**$3.1**	**$1.1**	**$4.2**

Source: DOD.

Legend: NA = Not Applicable.

Notes: GAO's analysis of DOD data.

Totals do not add due to rounding.

We also reviewed in more detail 90 of the 279,000 items. We selected the 90 items because they had large increases in requirements and accounted for $1.1 billion of the $4.2 billion of the requirements increase associated

[17] While the aviation items held by ships and installations are not insurance items, the Navy began reporting them as such in order to retain their visibility to item managers.

[18] About 28,000 items that the Navy managed as of September 30, 1999, were discontinued by September 30, 2001; however, the Navy added about 30,000 new items after September 30, 1999.

with the 279,000 items. For 37 of the 90 items, insurance requirements increases accounted for $454 million of the 90 items' $1.1 billion total requirements increase between 1999 and 2001. Of the $454 million, $428 million of the increase was attributable to including existing aviation requirements and $26 million was attributable to new aviation requirements. For example, the insurance requirement for an aviation radar transmitter, valued at $446,000 each and used on the F-18 and the AV-8B aircraft, increased from 44 transmitters on September 30, 1999, to 196 on September 30, 2001. The requirement caused an increase of 128 transmitters by recognizing existing aviation requirements in the Navy's inventory and an increase of another 24 transmitters as a result of new requirements for these transmitters in newer versions of the F-18 aircraft.

In addition to the $454 million increase in insurance item requirements, our analysis of the 90-item sample identified a wide variety of additional reasons for the increases in requirements. For example, increased usage of items resulted in requirements increasing by $294 million for 46 items. Increased usage was often the result of changes in demand for an item, defective parts needing to be replaced, and items wearing out at a faster rate than expected. Changes in the Navy's stock, overhaul, or operational policies; the inability to find a commercial source for an item; and the unavailability of material needed to manufacture items were among the other reasons for requirements increases. Table 4 summarizes the reasons identified for the requirements increases. Additional information and examples are discussed in more detail in appendix IV.

Table 4: Reasons for Navy Requirements Increases for Items Reviewed

Dollars in millions		
Reason for increase	**Number of items affected**	**Increase in requirements**
Increase in insurance item requirements	37	$454
Usage of the item increased	46	294
Navy changed stock, overhaul, or operational policies	36	126
Source or repair issues	29	137
Uncertainty of demand, lead time or wear-out rate increased safety levels	22	72
Increases were not valid	7	98
Data anomalies	2	2

Source: DOD.

Notes: GAO's analysis of DOD data.

Because some items had more than one reason for requirements increases, the number of items and value of the increased requirements exceeds 90 and $1.1 billion, respectively.

Navy Administrative Lead Time Requirements Are Not Accurately Computed and Are Overstated

The Navy has not formally updated the data it uses to project administrative lead time[19] requirements for aviation parts since 1999, and thus these requirements are overstated. Before 1999, the Navy used the actual administrative lead time from an item's previous procurement as a basis for projecting its future administrative lead time requirements for aviation parts. In 1999, the Navy began using an administrative lead time matrix for computing the requirements. Under this approach, the Navy places aviation items into matrix cells based on the type of item being purchased, the size of the potential purchase, and the type of contract to be used to purchase the item. The Navy believes that items that are similar and are purchased in a similar manner will have similar lead times. As of September 30, 2001, the Navy had computed $895 million of administrative lead time requirements for its 101,000 aviation parts.

When the Navy implemented the matrix approach for computing administrative lead time requirements in 1999, it based the requirements on actual fiscal year 1997 lead time data. Since 1997 the Navy has generally reduced its actual administrative lead time. While the Navy has recomputed its administrative lead times using statistical techniques

[19] Administrative lead time is the time between when the need to buy an item is identified and when a contract is let.

aimed at reducing fluctuations from year to year, it has not formally updated the administrative lead time matrix used to compute requirements to reflect the most current, lower data. However, in response to our inquiries, the Navy, in December 2002, reviewed the administrative lead time data used to compute requirements and found that the data had been revised. Item manager reviews and the purchase of items that had not recently been purchased led to changes to the lead time data in the files.

Our analysis of the changes showed that the revised data had lowered the administrative lead times for most of the matrix cells and that the Navy-computed lead times would be further reduced for most matrix cells. For example, revised data reduced the lead time from 200 days to 183 days for medium-sized sole-source contracts for repairable items. The Navy-computed lead time further reduced the lead time to 130 days. In contrast, for large-sized sole-source contracts for repairable items, the revised data reduced the lead time from 280 days to 183 days while the Navy-computed lead time set it at 195 days.

Navy officials responsible for aviation parts have been reluctant to use the lower Navy-computed lead time data. Even though the Navy uses a technique to reduce fluctuations in its computed lead time from year to year, the officials believe that annual changes in the lead time will result in terminating contracts for parts in 1 year and possibly having to repurchase the same items the next year.

Conclusions

The Navy is overstating its administrative lead time requirements for aviation items by not using the most current data available for computing those requirements. Because the most current data reflects the Navy's reduced administrative lead time, using old data unnecessarily results in inaccurate and overstated requirements that can lead to unnecessary purchases. The Navy is concerned that using the most current data will result in cycles of ordering inventory, canceling the orders, and subsequently reordering the items. We believe that using the most current data that is based on statistical techniques aimed at reducing potential fluctuations in the requirements will result in stable and more accurate administrative lead time requirements and help the Navy avoid unnecessary purchases.

Recommendation for Executive Action

To improve the accuracy of the Navy's secondary inventory requirements, we recommend that the Secretary of Defense direct the Secretary of the Navy to require the Commander, Naval Supply Systems Command, require its inventory managers to use the most current data available for computing administrative lead time requirements.

Agency Comments

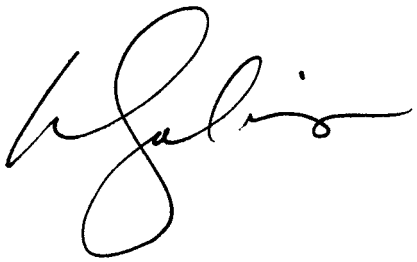
In commenting on a draft of the report, DOD generally concurred with the report. With regard to our recommendation, DOD noted that item managers use the most current data available to manually compute administrative lead time requirements when making management decisions for individual items and that in March 2003, the Navy formally updated its automated inventory system to begin using the most current data available to compute administrative lead time requirements for all items. This action to update the Navy's automated inventory system responds to our recommendation.

DOD's comments can be found in appendix V.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the issue date. At that time, we will send copies of this report to the Secretary of Defense; the Secretaries of the Army, the Navy, and the Air Force; the Director, Defense Logistics Agency; the Director, Office of Management and Budget; and other interested congressional committees. We will also make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at http://www.gao.gov/.

Please contact me on (202) 512-8365, if you or your staff have any questions concerning this report. Staff acknowledgments are listed in appendix VI.

Sincerely yours,



William M. Solis, Director
Defense Capabilities and Management

Appendix I: Scope and Methodology

To identify changes in the Department of Defense's (DOD) on-hand and on-order inventories for fiscal years 1996 through 2001, we used data developed in prior reviews and inventory stratification reports. We analyzed on-hand and on-order inventories as they related to the military components' requirements objectives. We held meetings to discuss these observations with officials from the Army Materiel Command, Alexandria, Virginia; the Naval Supply Systems Command, Mechanicsburg, Pennsylvania; the Air Force Materiel Command, Dayton, Ohio; and the headquarters of Defense Logistics Agency, Alexandria, Virginia. To determine the number of items that had more than or less than enough inventory to satisfy requirements, we obtained computerized inventory records from the military components as of September 30, 2001, the most recent end of fiscal year data at the time we began our examination. We did not test the reliability of the data. We used the computerized records to compare on-hand and on-order inventories to requirements on an item-by-item basis to determine if items had sufficient inventory available to satisfy requirements. DOD reported that its secondary inventory was valued at $63.3 billion in its September 30, 2001, *Supply System Inventory Report*. For our analyses, we used inventory stratification files and reports. We did not revalue the inventory that needs to be repaired to recognize the repair cost, and we did not value inventory that is to be disposed of at salvage prices. Also, our analyses did not include fuel, certain inventories held by units, and Marine Corps inventory. Fuel and inventories held by units are not stratified by requirement, and the Marine Corps inventory represents a small part of the universe.

To ascertain the causes for increases in inventory requirements, we compared September 30, 1999, inventory requirements to September 30, 2001, inventory requirements for the military components. Because the Navy had the largest dollar increase in requirements, we analyzed the Navy requirements in more detail. For items that the Navy managed in both 1999 and 2001, we compared the requirements to determine if the requirements increased, stayed the same, or decreased. We selected 90 items for detailed review based on how much their requirements increased between 1999 and 2001. The 90 items accounted for about $1.1 billion of the Navy's $4.7 billion increase in requirements. We met with appropriate personnel from the Philadelphia and Mechanicsburg, Pennsylvania, offices of the Naval Inventory Control Point to identify the specific reasons for the items' increase in requirements.

Appendix II: GAO Reports and Open Recommendations Relating to DOD's Inventory Management Problems

Defense Inventory: Better Reporting on Spare Parts Spending Will Enhance Congressional Oversight, GAO-03-18, Oct. 24, 2002

DOD's reports on spare parts spending—called Exhibit OP-31, Spares and Repair Parts, and submitted as part of the President's annual budget submission—do not provide an accurate and complete picture of spare parts funding as required by financial management regulation. As a result, the reports do not provide Congress with reasonable assurance about the amount of funds being spent on spare parts. Furthermore, the reports did not always contain actual expenditure data: all of the Army's annual operations and maintenance appropriations data and most of the services' commodity amounts were shown as estimates. Without actual data, the reports are of limited use to Congress as it makes decisions on how best to spend resources to reduce spare parts shortages and improve military readiness.

Open Recommendations

We recommended that the Secretary of Defense:

- issue additional guidance on how the services are to identify, compile, and report on actual and complete spare parts spending information, including supplemental funding, in total and by commodity, as specified by Exhibit OP-31; and
- direct the Secretaries of the military departments to comply with Exhibit OP-31 reporting guidance to ensure that complete information is provided to Congress on the quantities of spare parts purchased and explanations of deviations between programmed and actual spending.

Defense Inventory: Improved Industrial Base Assessments for Army War Reserve Spares Could Save Money, GAO-02-650, July 12, 2002

The Army, in its approach for assessing wartime spare parts industrial base capability, still does not use current data from industry. Instead, the Army uses historical parts procurement data because its prior efforts to collect current data from industry were not successful due to poor response rates. The Army's assessments depend on historical data and resulting lead-time factors to project industry's contribution to satisfying wartime spare parts requirements. Without current data on industry's capability, assessments could be unreliable, resulting in reduced readiness due to critical spare parts shortfalls in wartime or inflated and costly war reserve spare parts inventories in peacetime. Moreover, the Army's budget requests to Congress for war reserve spare parts risk being inaccurate.

We identified a program in the Defense Logistics Agency that has several attributes reflecting sound management practices that are required for reliable industrial base capability assessments. Our analysis of the

approach used by the Army compared to the Defense Logistics Agency's spare parts industrial base assessment program revealed that the Army's approach can be improved in three areas—data collection, data analysis, and management strategies.

Open Recommendations

We recommended that the Secretary of Defense direct the Army to:

- establish an overarching industrial base capability assessment process that considers the attributes in this report;
- develop a method to efficiently collect current industrial base capability data directly from industry itself;
- create analytical tools that identify potential production capability problems such as those due to surge in wartime spare parts demand; and
- create management strategies for resolving spare parts availability problems, for example, by changing acquisition procedures or by targeting investments in material and technology resources to reduce production lead times.

Defense Inventory: Air Force Needs to Improve Control of Shipments to Repair Contractors, GAO-02-617, July 1, 2002

We reported that Air Force and contractor personnel had largely not complied with DOD and Air Force inventory control procedures designed to safeguard material shipped to contractors, placing items worth billions of dollars at risk of fraud, waste, and abuse.

Open Recommendations

We recommended that the Secretary of Defense direct the Air Force to:

- Improve processes for providing contractor access to government-furnished material by
  - listing specific stock numbers and quantities of material in repair contracts (as they are modified or newly written) that the inventory control points have agreed to furnish contractors;
  - demonstrating that automated internal control systems for loading and screening stock numbers and quantities against contractor requisitions perform as designed;

  - loading stock numbers and quantities that the inventory control points have agreed to furnish to contractors into the control systems manually until the automated systems have been shown to perform as designed; and
  - requiring that waivers to loading stock numbers and quantities manually are adequately justified and documented based on cost-effective and/or mission-critical needs.
- Revise Air Force supply procedures to include explicit responsibility and accountability for
  - generating quarterly reports of all shipments of Air Force material to contractors, and
  - distributing the reports to Defense Contractor Management Agency property administrators.
- Determine, for the contractors in our review, what actions are needed to correct problems in posting material receipts.
- Determine, for the contractors in our review, what actions are needed to correct problems in reporting shipment discrepancies.
- Establish interim procedures to reconcile records of material shipped to contractors with records of material received by them, until the Air Force completed the transition to its Commercial Asset Visibility system in fiscal year 2004.
- Comply with exiting procedures to request, collect, and analyze contractor shipment discrepancy data to reduce the vulnerability of shipped inventory to undetected loss, misplacement, or theft.

Military Aircraft: Services Need Strategies to Reduce Cannibalizations, GAO-02-86, November 21, 2001

All the military services extensively use cannibalization—that is, removing serviceable parts from one piece of equipment and installing them in another—as a routine aircraft maintenance practice. In fiscal years 1996 through 2000, the Navy and the Air Force reported about 850,000 cannibalizations, requiring about 5.3 million additional maintenance hours. Cannibalizations have several adverse impacts. They increase maintenance costs by increasing mechanics' workloads, affect morale and personnel retention, and sometimes take expensive aircraft out of service for long periods of time. Cannibalizations can also create additional mechanical problems. The services have many reasons for cannibalizing aircraft and strong incentives for continuing to do so. However, with the exception of the Navy, they do not consistently track the specific reasons for cannibalizations. As a result, much of the information on causes is anecdotal. In the broadest sense, cannibalizations are done because of pressures to meet readiness and operational needs and because of shortcomings in the supply system.

Open Recommendations

We recommended that the Secretary of Defense direct the Army, the Navy and the Air Force to take the following actions:

- Establish standardized, comprehensive, and reliable cannibalization data-collection procedures and systems for cannibalizations.
- Measure and report the number of maintenance hours associated with cannibalizations.
- Develop strategies to reduce the number of maintenance hours spent on cannibalization, ensure that cannibalized aircraft do not remain grounded for long periods of time, and reduce the adverse effects of cannibalizations on maintenance costs and personnel. At a minimum, the strategies should include criteria to determine (1) which cannibalizations are appropriate, (2) cannibalization-reduction goals, and (3) the actions to be taken to meet those goals. The services must assign responsibility for ensuring that goals are being met and allocate resources for this purpose.

Defense Inventory: Navy Spare Parts Quality Deficiency Reporting Program Needs Improvement, GAO-01-923, August 16, 2001

The Navy's Product Quality Deficiency Reporting Program has been largely ineffective in gathering the data needed for analyses so that Navy managers can determine the full extent of spare parts quality deficiencies affecting maintenance activities. Without these data, managers lose opportunities to initiate important corrective and preventive action with parts and suppliers.

Open Recommendations

We recommended that the Secretary of Defense direct the Secretary of the Navy to:

- increase the program's levels of (1) training, describing what quality deficiencies to report, how to report them, and why it is important to the Navy; (2) incentives, including financial credits back to the reporting unit where appropriate to encourage participation; (3) automation support, to simplify and streamline reporting and analysis; and (4) management emphasis provided to the program, as necessary, to determine the causes, trends, and responsibilities for parts failures and achieve greater compliance with joint-service requirements, including reporting on parts that fail before the end of their design life; and
- require program officials to measure and periodically report to the appropriate Defense and Navy managers the results of the program in such areas as actions taken to correct parts quality deficiencies, prevent

recurrences, and obtain credits or reimbursements from suppliers for deficient products.

Navy Inventory: Parts Shortages Are Impacting Operations and Maintenance Effectiveness, GAO-01-771, July 31, 2001

Spare parts shortages for the EA-6B and the F-14 aircraft adversely impacted the Navy's readiness to perform assigned missions and the economy and efficiency of its maintenance activities. The shortages also contributed to problems retaining personnel. The primary reasons for spare parts shortages were that more parts were required than the Navy originally anticipated and problems in identifying, qualifying, or contracting with a private company to produce or repair the parts.

We did not make any recommendations in this report because of our prior recommendations on improving the Navy's management framework for implementing commercial practices and DOD's efforts to develop an overarching integration plan.

Army Inventory: Parts Shortages Are Impacting Operations and Maintenance Effectiveness, GAO-01-772, July 31, 2001

Aviation spare parts shortages for the Apache, Blackhawk, and Chinook helicopters adversely affected operations and led to inefficient maintenance practices that have lowered morale of maintenance personnel. Specifically, while the helicopters generally met their mission-capable goals, indicating that parts shortages have not affected their mission capability, supply availability rates and cannibalization of parts from one aircraft to another indicate that spare parts shortages have indeed been a problem. The reasons for the unavailability of the 90 parts we reviewed included actual demands for parts that were greater than anticipated, delays in obtaining parts from a contractor, and problems concerning overhaul and maintenance. For example, because a cracked gear in a Chinook transmission was discovered during an overhaul, the entire fleet was grounded in August 1999. As a result, the demand for the part has been much greater than anticipated. The Army and the Defense Logistics Agency have initiatives under way or planned that are designed to improve the availability of aviation parts. The initiatives generally address the reasons we identified for spare parts shortages. Additionally, the Army has developed a Strategic Logistics Plan that is designed to change its current approach to one that is more effective, efficient, and responsive. The plan's initiatives for resolving spare parts shortages are linked to the asset management process under the Army's planned change in approach. Some of these initiatives are new or in the planning stages. Once the initiatives are more fully developed, we plan to review them to determine whether there are opportunities to enhance them.

Because we previously reported problems with the way the Army has implemented its logistics initiatives and recommended that it develop a management framework for its initiatives, to include a comprehensive strategy and performance plan, we did not make recommendations in this report.

Air Force Inventory: Parts Shortages Are Impacting Operations and Maintenance Effectiveness, GAO-01-587, June 27, 2001

Spare parts shortages on the E-3 and C-5 aircraft and F-100-220 engines have adversely affected the performance of assigned missions and the economy and efficiency of maintenance activities. Specifically, the Air Force did not meet its mission-capable goals for the E-3 or C-5 during fiscal years 1996-2000, nor did it meet its goal to have enough F-100-220 engines to meet peacetime and wartime goals during that period. The majority of reasons cited by item managers at the maintenance facilities for spare parts shortages were most often related to more spares being required than were anticipated by the inventory management system and delays in the Air Force's repair process as a result of the consolidation of repair facilities. Other reasons included (1) difficulties with producing or repairing parts, (2) reliability of spare parts, and (3) contracting issues. The Air Force and the Defense Logistics Agency have numerous overall initiatives under way or planned that may alleviate shortages of the spare parts for the three aircraft systems we reviewed. The initiatives generally address the reasons we identified for the shortages. To ensure that the initiatives are achieving the goals of increasing efficiencies in the supply system, the Air Force has developed a Supply Strategic Plan that contains specific goals and outcome-oriented measures for the initiatives.

Because the Air Force's plan is in keeping with our previous recommendations to improve overall logistics planning, we did not make recommendations in this report. We will separately review the overall approach and initiatives, once they are more fully developed, to determine whether there are opportunities to enhance these efforts.

Defense Inventory: Approach for Deciding Whether to Retain or Dispose of Items Needs Improvement, GAO-01-475, May 25, 2001

DOD's components do not have sound analytical support for determining when it is economical to retain or dispose of the $9.4 billion in inventory the department is holding for economic reasons. The components' decision-making approaches for retaining economic retention inventory have evolved from the use of economic models to the use of judgmentally determined levels. In addition, the department did not have sound analytical support for the maximum levels they selected. Also, although the department requires annual reviews of the analyses supporting economic retention decisions, the components have generally not done

such reviews. As a result of these weaknesses, the department is vulnerable to retaining some items when it is uneconomical to do so and disposing of others when it is economical to retain them.

Open Recommendations

We recommended that the Secretary of Defense direct the Secretaries of the Army, the Navy, and Air Force and the Director of the Defense Logistics Agency to:

- establish milestones for reviewing current and recently used approaches for making decisions on whether to hold or dispose of economic retention inventory to identify actions needed to develop and implement appropriate approaches to economic retention decisions; and
- annually review their approaches to meet department regulations to ensure that they have sound support for determining economic retention inventory levels.

Defense Inventory: Army War Reserve Spare Parts Requirements Are Uncertain, GAO-01-425, May 10, 2001

In the October-December 2000 time frame, the Army reported that it had about 35 percent of its prepositioned spare parts on hand and a $1-billion shortfall in required spare parts for its war reserves. Notwithstanding the reported shortages, we identified uncertainties about the accuracy of the Army's requirements. For example, we identified a potential mismatch between the Army's methodology for determining parts requirements and the Army's planned battlefield maintenance practices.

Open Recommendations

We recommended that the Secretary of Defense:

- Assess the priority and level of risk associated with the Army's plans for addressing the reported shortfall in Army war reserve spare parts.
- Direct the Army to provide accurate calculations of the Army's war reserve spare parts requirements by
  - developing and using the best available consumption factors in calculating all spare parts requirements for the Army's war reserves;
  - eliminating potential mismatches in how the Army calculates its war reserve spare parts requirements and the Army's planned battlefield maintenance practices; and
  - developing fact-based estimates of industrial base capacity to provide the needed spare parts in the two major theater war scenarios time frames.

- Include in future industrial capabilities reports more comprehensive assessments on industry's ability to supply critical spare parts for two major theater wars.

Defense Inventory: Process for Canceling Inventory Orders Needs Improvement, GAO/NSIAD-00-160, June 30, 2000

Requirements for the 490 items we reviewed often changed after the orders were placed, which caused the items to exceed requirements. Further, because of inaccurate inventory records, 182 of the 490 items (valued at $170 million) were reported as excess, but were not actually excess to requirements. Because of the large number of inaccurate records, neither DOD nor the military components know whether managers are efficiently focusing their efforts to cancel excess inventory on order, and the department does not have an accurate view of the total value of its excess inventory on order. Each component's process for canceling orders that exceeded requirements differs and cannot be relied on to consistently identify orders to be considered for cancellation or to terminate orders when economical.

Specifically:

- The components use different criteria for the amount of excess inventory on order they consider for cancellation.
- Only the Defense Logistics Agency consistently uses its computer model to determine whether it is more economical to cancel orders or not. However, of the $696 million its model referred for consideration during a 3-month period in 1999, less than $11 million in orders were canceled.
- The military components' frequency in reviewing orders of excess inventory for cancellation ranges from monthly to quarterly. The longer components wait to consider an item for cancellation, the less likely cancellation will be cost-effective because they have to pay the contractor for costs incurred until the order is canceled.
- The components' goals for reducing excess inventory on order vary and are not comparable. Thus, the department cannot evaluate the components' progress in reducing excess inventory on order in a consistent way.

Open Recommendations

We recommended that the Secretary of Defense, in conjunction with the Secretaries of the Army, the Navy, and the Air Force, and the Director of the Defense Logistics Agency review and improve the processes for identifying and canceling orders, focusing on areas such as

- the accuracy of inventory management records;
- the level at which the services and the Defense Logistics Agency identify excess inventory on order that is subject to cancellation review, including low-dollar excess inventory on order that is excluded from cancellation review;
- the timeliness and frequency of reviews for identifying excess items on-order; and
- the validity and use of the military components' termination models in making economic analyses.

We also recommended that the Secretary of Defense require the Secretaries of the Army, the Navy, and the Air Force, and the Director of the Defense Logistics Agency to report on the amount of all excess inventory on order, identifying inventory on order that exceeds both the requirements objective and the approved acquisition objective.

Appendix III: DOD and Military Component Inventory Requirements at the End of Fiscal Years 1999 and 2001

Table 5: Comparison of Inventory Requirements for the Department of Defense at the End of Fiscal Years 1999 and 2001

Dollars in billions

Requirement	Fiscal year 1999 requirements	Fiscal year 2001 requirements	Increase/ decrease since fiscal year 1999	Percent change since fiscal year 1999
War reserves	$2.9	$3.3	$0.4	13
Depot requirements objective	[a]	0.3	0.3	[b]
Unfilled requisitions	3.2	3.1	-0.1	-3
Safety level	5.9	8.2	2.3	39
Insurance items	4.6	7.4	2.8	62
Repair cycle	3.6	4.2	0.6	18
Production lead time	6.1	8.1	2.0	32
Administrative lead time	3.5	4.4	0.9	26
Lead time nonrecurring demand[c]	2.7	1.6	-1.1	-39
Economic order quantity	8.1	10.5	2.4	30
Total	**$40.6**	**$51.2**	**$10.6**	**26**

Source: DOD.

[a] The Army is the only component that uses this requirement for reporting retail level requirements and inventory. It began its use in fiscal year 2000.

[b] This percentage calculation is not meaningful since comparable data were not available for fiscal year 1999.

[c] The Air Force is the only component that reports lead time nonrecurring demand as a separate requirement.

Table 6: Comparison of Inventory Requirements for the Defense Logistics Agency at the End of Fiscal Years 1999 and 2001

Dollars in billions

Requirement	Fiscal year 1999 requirements	Fiscal year 2001 requirements	Increase/ decrease since fiscal year 1999	Percent change since fiscal year 1999
Unfilled requisitions	$0.8	$1.0	$0.2	21
Safety level	1.0	1.6	0.6	62
Production lead time	2.9	3.5	0.6	21
Administrative lead time	1.9	2.6	0.7	39
Economic order quantity	2.6	3.8	1.2	46
Total	**$9.1**	**$12.4**	**$3.3**	**36**

Source: DOD.

Note: Percentages were calculated prior to rounding.

Table 7: Comparison of Inventory Requirements for the Army at the End of Fiscal Years 1999 and 2001

Dollars in billions

Requirement	Fiscal year 1999 requirements	Fiscal year 2001 requirements	Increase/ decrease since fiscal year 1999	Percent change since fiscal year 1999
War reserves	$0.9	$1.1	$0.2	20
Depot requirements objective	[a]	0.3	0.3	[b]
Unfilled requisitions	0.8	0.9	0.2c	23
Safety level	0.3	0.9	0.6	203
Insurance items	0.0[d]	0.0[d]	0.0d	67[d]
Repair cycle	0.6	0.9	0.3	52
Production lead time	1.0	1.6	0.6	59
Administrative lead time	0.3	0.4	0.2c	64
Economic order quantity	2.1	2.9	0.8	35
Total	**$6.0**	**$9.1**	**$3.1**	**52**

Source: DOD.

Note: Percentages were calculated prior to rounding.

[a] The Army did not use this requirement for fiscal year 1999.

[b] Because there was no data for fiscal year 1999, this percentage could not be computed.

[c] Differences are due to rounding.

[d] The Army reported insurance items valued at less than $50 million.

Table 8: Comparison of Inventory Requirements for the Navy at the End of Fiscal Years 1999 and 2001

Dollars in billions

Requirement	Fiscal year 1999 requirements	Fiscal year 2001 requirements	Increase/ decrease since fiscal year 1999	Percent change since fiscal year 1999
War reserves[a]	$0.0	$0.0	$0.0	-32
Unfilled requisitions	0.7	0.5	-0.3[b]	-35
Safety level	0.6	0.8	0.2	35
Insurance items	2.4	5.8	3.4	142
Repair cycle	1.2	1.6	0.4	30
Production lead time	1.1	1.6	0.5	50
Administrative lead time	1.1	1.0	-0.1	-6
Economic order quantity	3.4	3.8	0.5[b]	14
Total	**$10.5**	**$15.2**	**$4.7**	**44**

Source: DOD.

Note: Percentages were calculated prior to rounding.

[a] The Navy reported war reserve items valued at less than $50 million.

[b] Differences are due to rounding.

Table 9: Comparison of Inventory Requirements for the Air Force at the End of Fiscal Years 1999 and 2001

Dollars in billions

Requirement	Fiscal year 1999 requirements	Fiscal year 2001 requirements	Increase/ decrease since fiscal year 1999	Percent change since fiscal year 1999
War reserves	$2.0	$2.2	$0.2	11
Unfilled requisitions	0.9	0.7	-0.2	-22
Safety level	4.1	5.0	0.9	22
Insurance items	2.2	1.5	-0.6[a]	-28
Repair cycle	1.8	1.7	0.0[a]	-2
Production lead time	1.1	1.4	0.2[a]	20
Administrative lead time	0.3	0.4	0.1	29
Lead time nonrecurring demand	2.7	1.6	-1.1	-39
Total	**$14.9**	**$14.5**	**$-0.5[a]**	**-3**

Source: DOD.

Note: Percentages were calculated prior to rounding.

[a] Differences are due to rounding.

Appendix IV: Reasons for Requirements Increasing between September 30, 1999, and September 30, 2001, for 90 Sample Items

Navy Usage Increased

Increased usage resulted in requirements increasing by $294 million for 46 items. Usage of the items increased for a variety of reasons, including

- recurring demand for items increased,
- defective parts needing to be replaced,
- demands being received for items that are not normally stocked,
- increases in the number of ships or aircraft using items,
- items reaching the end of their useful life,
- unplanned foreign military sales,
- usage shifting from other items,
- items wearing out at a faster rate than expected, and
- items being new to the inventory system.

For example, unfilled requisitions, safety level, repair cycle, and production and administrative lead time requirements for the hub used on the AH-1W (Cobra) helicopter increased from 24 on September 30, 1999, to 48 on September 30, 2001. During that time, many of the hubs reached the end of their 1,100-hour life and had to be replaced. As a result, demand for the $275,000 hub increased from 31 a year in 1999 to 74 a year in 2001.

Navy Changed Stock, Overhaul, or Operational Policies

Changes in stock, overhaul, or operational policies resulted in requirements increases of $126 million for 36 items. For example, repair cycle requirements for a radio transmitter modulator increased from 10 in September 1999 to 22 in September 2001. The increase was a result of the Navy requiring that the transmitter modulator, valued at $136,000 each, be operational 100 percent of the time. Previously, ships were permitted to operate in a degraded status with the modulator not operational.

Source or Repair Issues

Source and repair issues for 29 items resulted in requirements increases of $137 million. A wide variety of reasons fell into this category, including entering requirements for an item that would no longer be available to provide support for a weapon system for its remaining life, difficulties in identifying a commercial source for an item, unavailability of material needed to manufacture items, and increased time needed to repair or buy an item. For example, economic order quantity requirements for a data module used in a submarine control panel increased from 75 in September 1999 to 410 in September 2001. The item manager explained that the manufacturing source of supply for the data module was being lost, and the requirement was increased to protect the 419 on-hand modules from being subject to disposal. In August 2002, the Navy had 229 of the $10,000 modules on hand.

Uncertainty of Demand, Lead Time, or Wear-Out Rate

Uncertainty of demand, lead time, and the rate at which items wear out for 22 items resulted in safety level requirements increasing by $72 million. Safety level requirements are intended to compensate for unplanned increases in demand, lead times, and the rate at which items wear out. For example, the safety level requirement for an inertial navigational unit used on several aircraft such as the AV-8B, the F-14D, and several versions of the F-18 increased from 2 in September 1999 to 15 in September 2001. The increased requirement was the result of demands for the $170,000 unit increasing from 155 to 205 a year.

Increases Were Not Valid

Requirements increases, valued at $98 million, were not valid for seven items. The reasons for the invalid requirements included overstating the 2001 requirement, understating the 1999 requirement, and inappropriately recording nonrecurring requirements. For example, the September 2001 requirements requiring replacement for an electron tube for a transmitter used on the EA-6B aircraft were overstated because the requirements were inappropriately based on demand for the tube instead of the rate at which the tube was failing and needed to be replaced. As a result, safety level, repair cycle, administrative and production lead times and economic order quantity requirements were overstated by 2,124 tubes for the $57,500 item.

Data Anomalies

Data anomalies for two items resulted in a requirement increase of $2 million. For both of the items, requirements increased for unfilled requisitions. The item manager for the items explained that the items' requirements, as of September 30, 2001, reflected back orders as of that date and that the back orders were not the result of any particular reason—just the status as of that date. The item manager explained that the back orders went away when material was shipped a few days after September 30th.

Appendix V: Comments from the Department of Defense

DEPUTY UNDER SECRETARY OF DEFENSE FOR
LOGISTICS AND MATERIEL READINESS
3500 DEFENSE PENTAGON
WASHINGTON, DC 20301-3500

APR 15 2003

Mr. William M. Solis
Director, Defense Capabilities and Management
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Solis:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, GAO-03-355: "DEFENSE INVENTORY: Overall Inventory and Requirements Are Increasing, but Some Reductions in Navy Requirements Are Possible," dated March 14, 2003 (GAO Code 350227). The DoD generally concurs with the report.

Detailed comments on the draft report recommendation are included in the enclosure. The DoD appreciates the opportunity to comment on the draft report.

Sincerely,

for Diane K. Morales

Enclosure

GAO DRAFT REPORT GAO-03-355 DATED MARCH 14, 2003
(GAO CODE 350227)

"DEFENSE INVENTORY: OVERALL INVENTORY AND REQUIREMENTS ARE INCREASING, BUT SOME REDUCTIONS IN NAVY REQUIREMENTS ARE POSSIBLE"

DEPARTMENT OF DEFENSE COMMENTS TO THE GAO RECOMMENDATION

RECOMMENDATION: The GAO recommended that the Secretary of Defense direct the Secretary of the Navy to require the Commander, Naval Supply Systems Command require its inventory managers to use the most current data available for computing administrative lead time requirements. (Page 19/Draft Report).

DOD RESPONSE: Partially Concur. The Navy inventory managers use the most current data available to manually compute administrative lead time when making management decisions such as procurement. However, we concur that the Navy should formally update the administrative lead time matrix. In March 2003, the Navy implemented an updated administrative lead time matrix utilizing the most current data available. This action is complete.

Appendix VI: Staff Acknowledgments

Key contributors to this report were Lawson Gist, Jr., Louis Modliszewski, David Epstein, and R.K. Wild.

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