

**GAO**

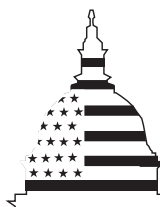
Report to the Chairman and Ranking  
Minority Member, Committee on Armed  
Services, U.S. Senate

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June 2000

# DEFENSE INVENTORY

## Process for Canceling Inventory Orders Needs Improvement



**G A O**

Accountability \* Integrity \* Reliability

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**Abbreviations**

DOD      Department of Defense  
DLA      Defense Logistics Agency



B-283680

June 30, 2000

The Honorable John Warner  
Chairman  
The Honorable Carl Levin  
Ranking Minority Member  
Committee on Armed Services  
United States Senate

This report is one in a series of reports on the Department of Defense's management of inventory—spare and repair parts and other items that support the Department's operating forces on land, at sea, and in the air.<sup>1</sup> Over the past several years, we have prepared a number of testimonies and reports that cite the Department's management of inventory as a high-risk area.<sup>2</sup> For example, we have issued several reports and testimonies related to the Department's problems involving levels of inventory in excess of current needs, the lack of adequate systems for determining inventory requirements, and inaccurate records on the actual amount and value of its inventories. As of September 30, 1999, the Department reported that it had about \$8.1 billion of inventory on order, \$1.6 billion of which exceeded requirements—the amount of inventory the Department indicated as needed to prevent out-of-stock situations.

As mandated by Senate Report 106-50 relating to the National Defense Authorization Act for Fiscal Year 2000, we reviewed inventory on order that exceeded requirements. Specifically, we (1) determined the extent to which orders exceeded requirements when the orders were placed and (2) assessed the processes for canceling orders that exceeded requirements.

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<sup>1</sup>The Department of Defense refers to these items as secondary inventory. See a list of related GAO products at the end of this report.

<sup>2</sup>In 1990, we began a special effort to review and report on the federal program areas that we had identified as high risk because of vulnerabilities to waste, fraud, abuse, and mismanagement. This effort, which was supported by the Senate Committee on Governmental Affairs and the House Committee on Government Reform, brought a much needed focus on problems that were costing the government billions of dollars. We identified inventory management as high risk in our 1992, 1995, 1997, and 1999 high-risk reports.

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In doing our review, we focused on the criteria that the services and the Defense Logistics Agency use to purchase inventory, identify inventory orders for cancellation, determine the economic benefits of canceling orders, and report the amount of inventory on order that exceeds requirements. We based our analysis on 490 Army, Navy, Air Force, and Defense Logistics Agency items that had about \$375 million worth of inventory on order that was in excess of requirements. For the 490 items, we selected some items that had the highest values of inventory on order in excess of requirements and a cross section, based on value, of the remaining items. The 490 items included 360 Navy and Air Force items that we reviewed as part of prior audit work.<sup>3</sup> The scope and methodology of our work are described in greater detail in appendix I.

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## Results in Brief

For the 490 items we reviewed, we found no evidence that inventory orders exceeded requirements when the orders were first placed. Managers had placed orders after ensuring that they were supported by requirements, consistent with the Department of Defense's policies. However, requirements for the items often changed after the orders were placed, which caused the items to exceed requirements. For example, the demand for helicopter control indicators decreased from the original requirement for 184 indicators to 107 after the order was placed. 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. For example, after orders were placed, some inventory was counted once as on hand and again as on order, causing the inventory on order to exceed requirements. Because of the large number of inaccurate records, neither the Defense Department 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.

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<sup>3</sup>*Navy Inventory Management: Improvements Needed to Prevent Excess Purchases* (GAO/NSIAD-98-86, Apr. 30, 1998) and *Defense Inventory: Improvements Needed to Prevent Excess Purchases by the Air Force* (GAO/NSIAD-00-5, Nov. 10, 1999).

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Specifically:

- The components use different criteria for the amount of excess inventory on order they consider for cancellation. The Army and Defense Logistics Agency consider orders for cancellation when the inventory ordered exceeds requirements; the Navy and Air Force consider canceling orders when the inventory is at higher levels. Thus, the Army and Defense Logistics Agency consider more of their excess inventory on order for cancellation than the Navy and Air Force do.
- 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 Army and Air Force infrequently use their models, and the Navy has not used its model since 1993 because it overestimated contract termination costs, thus eliminating contracts for consideration. The lack of use of the models and cancellation of items referred for consideration raises questions about their effectiveness.
- 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 of Defense cannot evaluate the components' progress in reducing excess inventory on order in a consistent way.

We are recommending that the Department of Defense review and improve its processes for identifying and canceling excess inventory on order. In written comments on a draft of this report, the Department of Defense agreed with our recommendations.

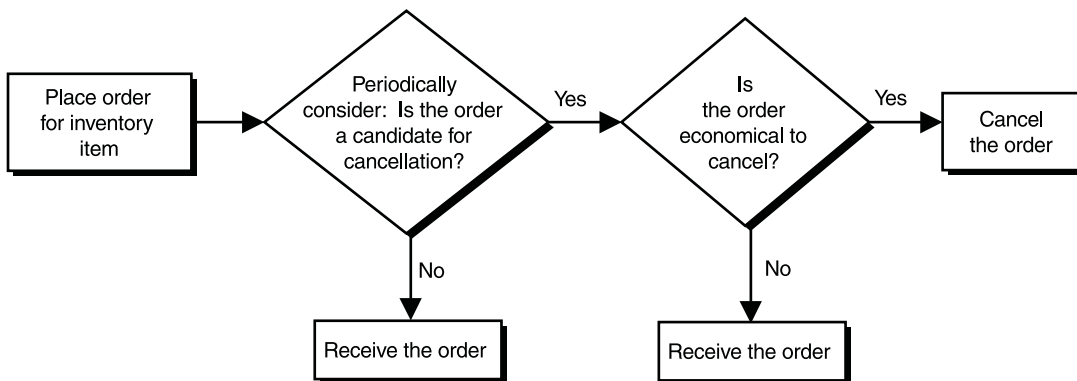
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## Background

Inventory management comprises several major functions, including determining what is needed; buying needed items; and storing, maintaining, distributing, and disposing of these items. The military services and the Defense Logistics Agency (DLA) use automated inventory management models that identify the need to place orders when the total inventory falls below a predetermined level. The models also periodically consider whether orders exceed requirements and are candidates for cancellation. After the models identify orders that are candidates for cancellation, the

services and DLA use other models or analyses to determine whether canceling the orders is economical. The Department of Defense's (DOD) general process for placing an order and subsequently evaluating the order to determine if it is a candidate for cancellation is shown in figure 1.

Figure 1: DOD's Process for Managing Inventory on Order



In general, DOD categorizes inventory as follows and as illustrated in figure 2:

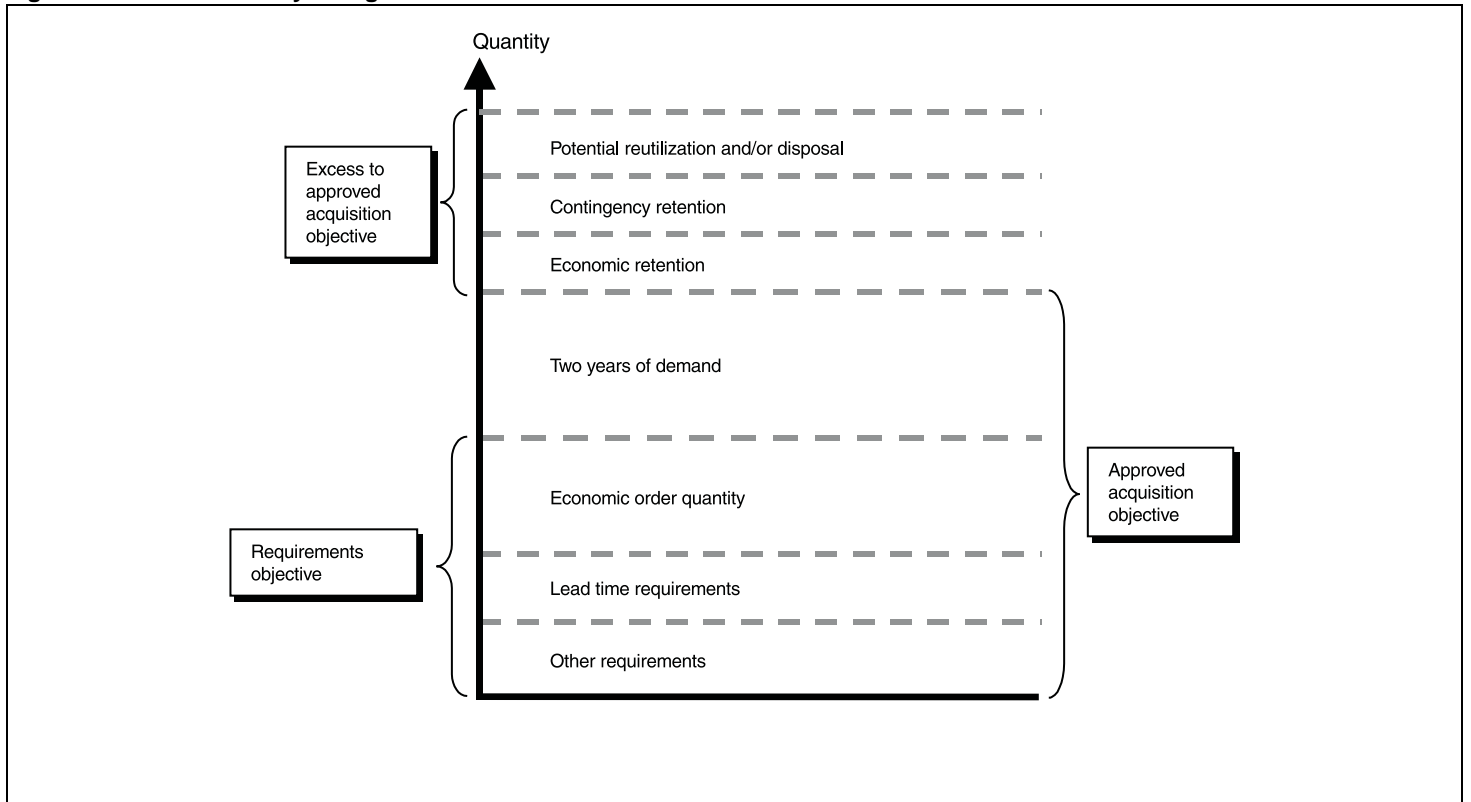
1. The requirements objective represents the amount of inventory to be purchased and includes
  - war reserves, requisitions that have not been shipped, and a “safety level” of stock;<sup>4</sup>
  - stock to satisfy demands during the “lead time”—the period between the placement of orders and their receipt; and
  - an economic order quantity, or a quantity that should result in the lowest total costs for ordering and holding inventory.
2. The approved acquisition objective defines the amount of inventory DOD budgets for and includes inventory needed to satisfy 2 years of demand for items above the requirements objective.

<sup>4</sup>War reserves are authorized to be purchased to ensure fast mobilization in the event of war. A safety level is stock kept on hand in case of minor interruptions in the resupply process or unpredictable fluctuations in demand.



3. Inventory that exceeds the approved acquisition objective is categorized as economic retention, contingency retention, and potential reutilization and/or disposal materiel.<sup>5</sup>

Figure 2: DOD's Inventory Categories



<sup>5</sup>Economic retention inventory exceeds the approved acquisition objective and has been determined to be more economical to keep than to dispose of because it is likely to be needed in the future. Contingency retention inventory exceeds the economic retention inventory and would normally be processed for disposal but is retained for specific contingencies. Potential reutilization and/or disposal materiel exceeds contingency retention and has been identified for possible disposal but with potential for reutilization.

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## Components Justified Orders Based on Requirements

Although the services and DLA reported \$1.6 billion of inventory on order that exceeded requirements, we found no evidence that orders were in excess of requirements when they were placed for the 490 items we reviewed.<sup>6</sup> Generally, requirements for the items decreased after orders were placed, which resulted in the items having inventory on order that exceeded requirements. However, DOD inventory records showed that \$170 million worth of excess inventory on order reviewed was still needed. The \$170 million, or 45 percent of the amount reviewed, was erroneously reported as excess because of inaccurate records. As a result, 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.

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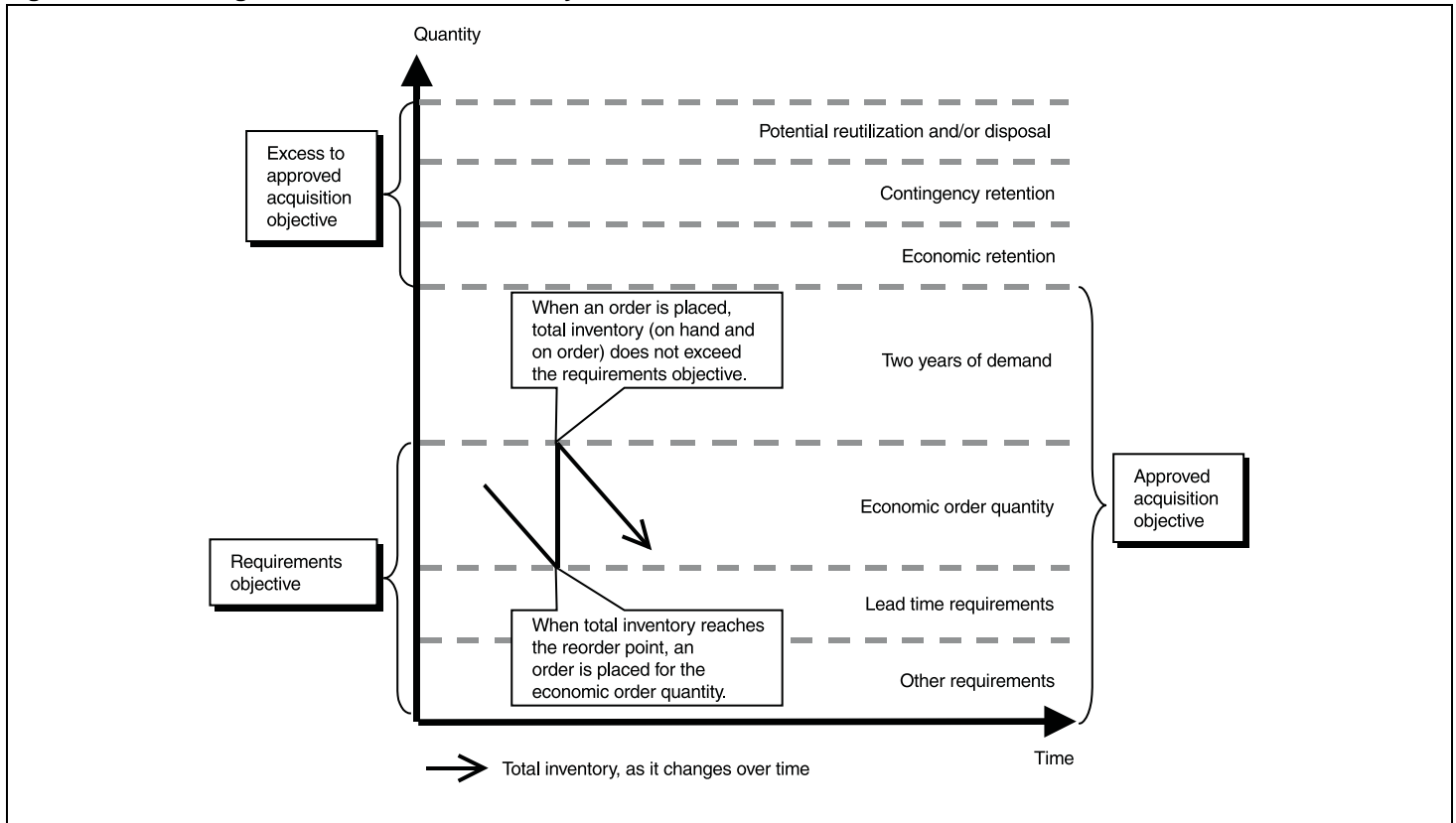
## Managers Followed Purchasing Models

Managers had made purchases for the 490 items we reviewed consistent with DOD's model for purchasing inventory. (See fig. 3). The model identifies items to be purchased when inventory falls to a certain level called the reorder point. After managers review requirements and available assets to validate the need to purchase inventory, they place orders for a quantity of inventory that is supposed to represent the lowest total costs for ordering and holding inventory called an economic order quantity. The requirements objective comprises the reorder point and the economic order quantity.

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<sup>6</sup>DOD calculates requirements through several different computations and models. The managers rely on these models and the accuracy of inventory records to make orders. In prior work, we have questioned some assumptions in the models as well as the accuracy of the inventory records. See *Navy Inventory Management: Improvements Needed to Prevent Excess Purchases* (GAO/NSIAD-98-86, Apr. 30, 1998) and *Financial Management: Better Controls Essential to Improve the Reliability of DOD's Depot Inventory Records* (GAO/AIMD-99-132, June 28, 1999).

Figure 3: Purchasing an Economic Order Quantity at the Reorder Point



**Requirements Changed and Records Became Inaccurate**

The most common reason for inventory on order being in excess of the requirements objective was that requirements decreased after orders were placed. For example, the Army manager for a control indicator used on the de-icing system for the UH-60A helicopter used a February 1997 requirement computation to support the purchase of 184 indicators valued at \$1.4 million. After the order was placed, demand for the item decreased, resulting in a lower requirements objective. Consequently, 107 of the indicators on order exceeded the lower requirements objective.

Accurate data are necessary for the services' and DLA's inventory management models to properly identify items with excess inventory on order for managers to review. However, as shown in table 1, the recorded data on 182 of the 490 items we reviewed showed that there was excess inventory valued at \$170 million, or 45 percent of the total reviewed, when other records showed there was no excess. Determining whether inventory

is in fact excess—even though at the time of ordering the records may have been correct—increases managers’ workloads.

**Table 1: Inventory on Order Inaccurately Reported as Excess**

Dollars in millions

Component	Items reviewed		Items with errors	
	Number	Reported value of excess	Number	Reported value of excess
Army	49	\$30.9	20	\$16.9
Navy	200	48.3	83	14.9
Air Force	160	162.4	32	26.3
DLA	81	133.1	47	111.9
<b>Total</b>	<b>490</b>	<b>\$374.7</b>	<b>182</b>	<b>\$170.0</b>

Source: DOD inventory records.

Generally, excess inventory on order was misstated because the components’ inventory management models did not accurately reflect requirements or available inventory. For example, September 30, 1999, data on a turbine nozzle used on the engine for the H-53 helicopter showed that DLA had an excess of 693 nozzles on order. We found, however, that a large number of nozzles, costing \$359 each, were erroneously recorded twice in inventory records—once as on hand and once as on order. After the item’s manager corrected the inventory records in December 1999, DLA needed to order an additional 33 nozzles.

Twenty of the 49 Army items reviewed had inaccuracies that caused an overstatement of the amount of excess inventory on order. For example, September 1999 inventory records show that 71 valves used on an aircraft engine and valued at \$3,391 each were on order and exceeded requirements. However, after the order was placed, the valve was replaced with a different type. The Army had made arrangements for the contractor to provide the replacement valves but did not update the inventory records to reflect this change. Thus, there was no excess on order. Officials at the Army’s Aviation and Missile Command told us that in 1999 they tried to reduce excess inventory on order by identifying for special review the top 30 items that had excess orders valued at over \$67 million. The review determined that the value of excess inventory on order identified as excess was overstated by over \$10 million. Causes for the overstated inventory

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included inventory records that reflected inaccurate amounts of inventory on hand and on order and understated requirements.

In November 1999, we reported on inaccuracies in Air Force records.<sup>7</sup> For example, Air Force records for September 30, 1997, showed that 24 thermal insulation tiles used on the B-2 aircraft were on hand and an additional 7 were on order. By May 1998, the Air Force was using a different type of insulation tile, and when the manager attempted to terminate the order for the seven tiles, he was informed by a contracting official that the records showing the quantity on order were in error. The tiles, which cost \$5,400 each, had been delivered a year earlier in May 1997. The Air Force has begun an initiative to improve its data accuracy by 2003.

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## Cancellation Processes Cannot Be Relied Upon to Make Economical Decisions

The DOD processes used to cancel excess inventory on order cannot be relied upon to consistently identify orders to be considered for cancellation. Our analyses of DOD inventory records showed that the amount of DOD's reported excess inventory changed little during fiscal years 1996-99. While the Army, Navy, Air Force, and DLA purchase inventory to meet the requirements objective, our analyses showed that some processes (1) limited the extent to which orders were considered for cancellation, (2) resulted in few cancellations, and (3) did not identify some orders for cancellation in a timely manner. As a result, the components missed opportunities to cancel orders for excess items. In addition, differences in the components' measures of excess inventory on order prevent DOD from evaluating the components' progress in a consistent and comparable manner.

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## DOD's Excess Inventory on Order Has Changed Little

Overall, DOD's excess inventory on order changed little during fiscal years 1996-99. We based our analyses on the requirements objective and the approved acquisition objective for those years because the requirements objective represents the level of inventory that managers buy, and the approved acquisition objective represents the level of inventory for which the components budget. (See table 2.)

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<sup>7</sup>*Defense Inventory: Improvements Needed to Prevent Excess Purchases by the Air Force* (GAO/NSIAD-00-5, Nov. 10, 1999).

Table 2: Reported Value of DOD Excess Inventory on Order for Fiscal Years 1996–99

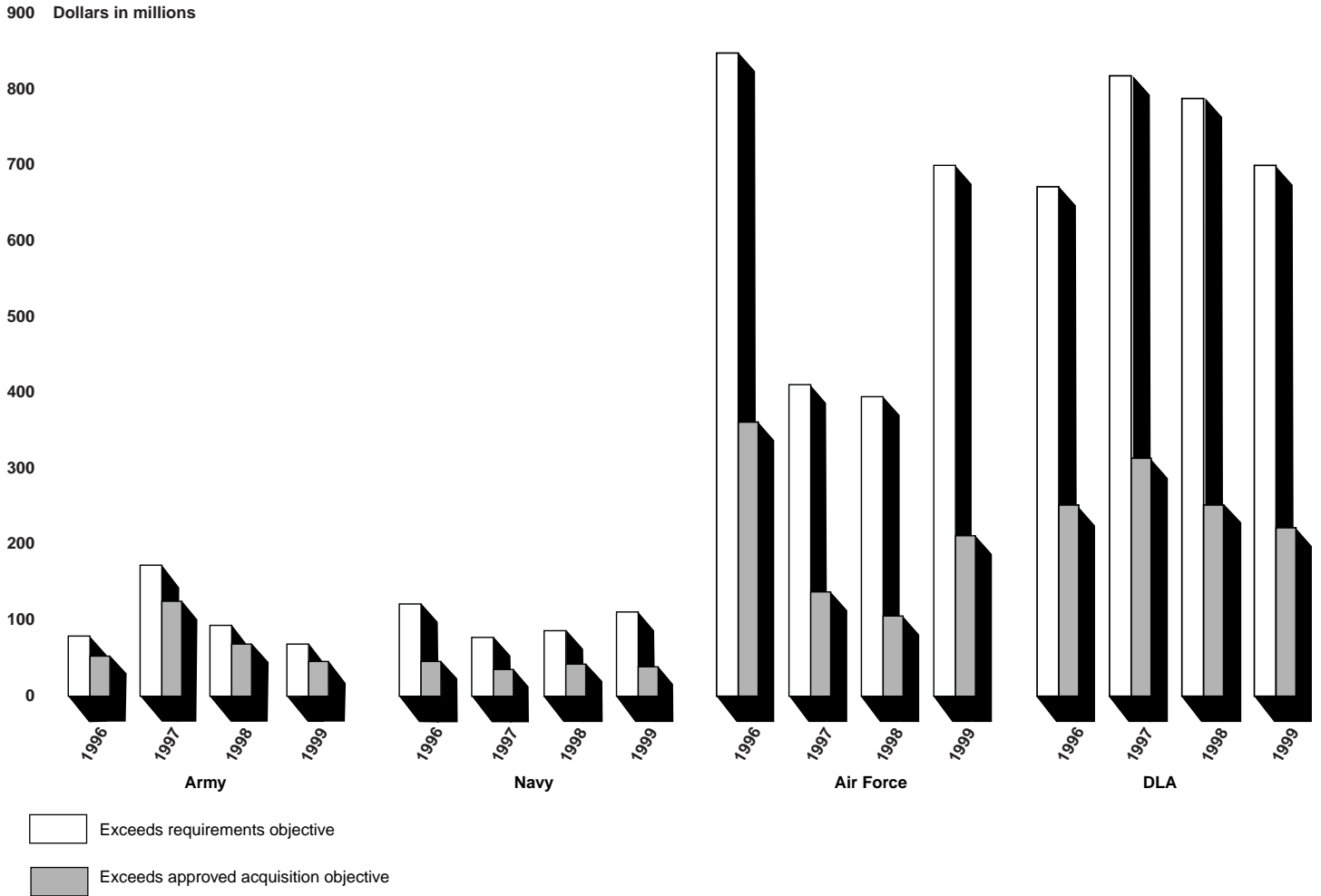
Dollars in millions

Fiscal year	Total reported value of inventory on order	Excess inventory on order based on requirements objective		Excess inventory on order based on approved acquisition objective	
		Reported value	Percent	Reported value	Percent
1996	\$8,852.2	\$1,711.6	19	\$708.4	8
1997	8,002.7	1,470.6	18	608.9	8
1998	7,867.6	1,355.6	17	464.7	6
1999	8,145.6	1,572.1	19	515.4	6

Source: DOD inventory records.

When considered individually, the amount of the services' and DLA's excess inventory on order varied, regardless of whether based on the requirements objective or the approved acquisition objective (see fig. 4). The Army and Navy had the lowest reported amounts of excess inventory on order. While the Air Force's reported excess inventory on order decreased during fiscal years 1996-1998, the amount of Air Force excess inventory on order increased substantially for fiscal year 1999. According to an Air Force official, the excess increased in 1999 primarily because the Air Force Materiel Command directed managers to consider canceling excess inventory on order only if it was valued at \$100,000 or more so that they could devote more time to budget preparation. While DLA's reported excess on order inventory remains high relative to the Army and Navy, DLA has decreased its excess on order over the last 2 years.

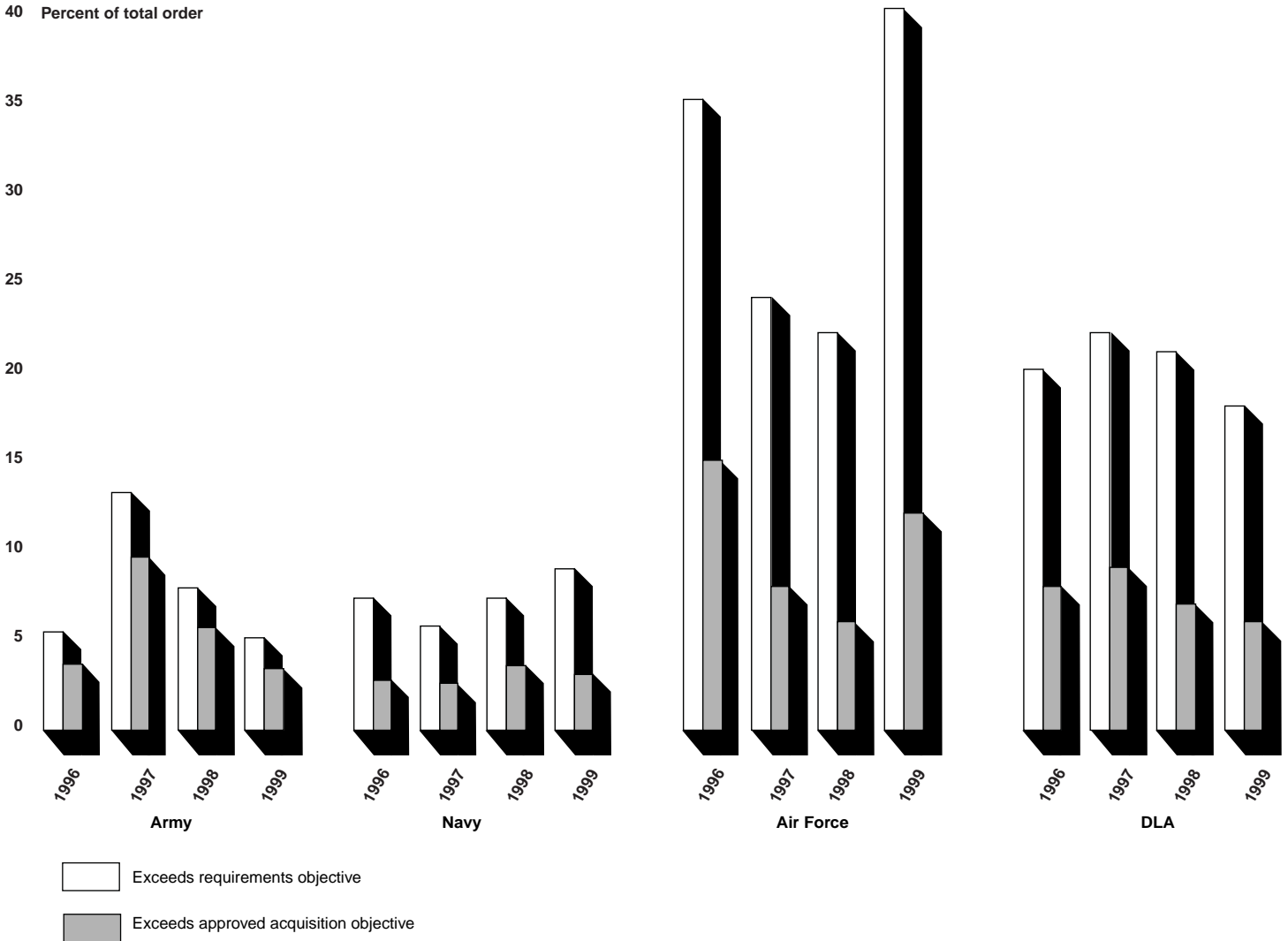
Figure 4: Reported Value of Excess Inventory on Order for Fiscal Years 1996–99



Source: DOD inventory records.

While the reported value of Army and Navy excess inventory on order (regardless of how computed) was generally about \$100 million or less, Air Force and DLA excesses were much larger. This was also the case when the reported excesses were measured as a percentage of the total inventory on order, as shown in figure 5.

Figure 5: Percentage of Reported Value of Excess Inventory on Order and Total Inventory on Order for Fiscal Years 1996–99



Source: DOD inventory records.

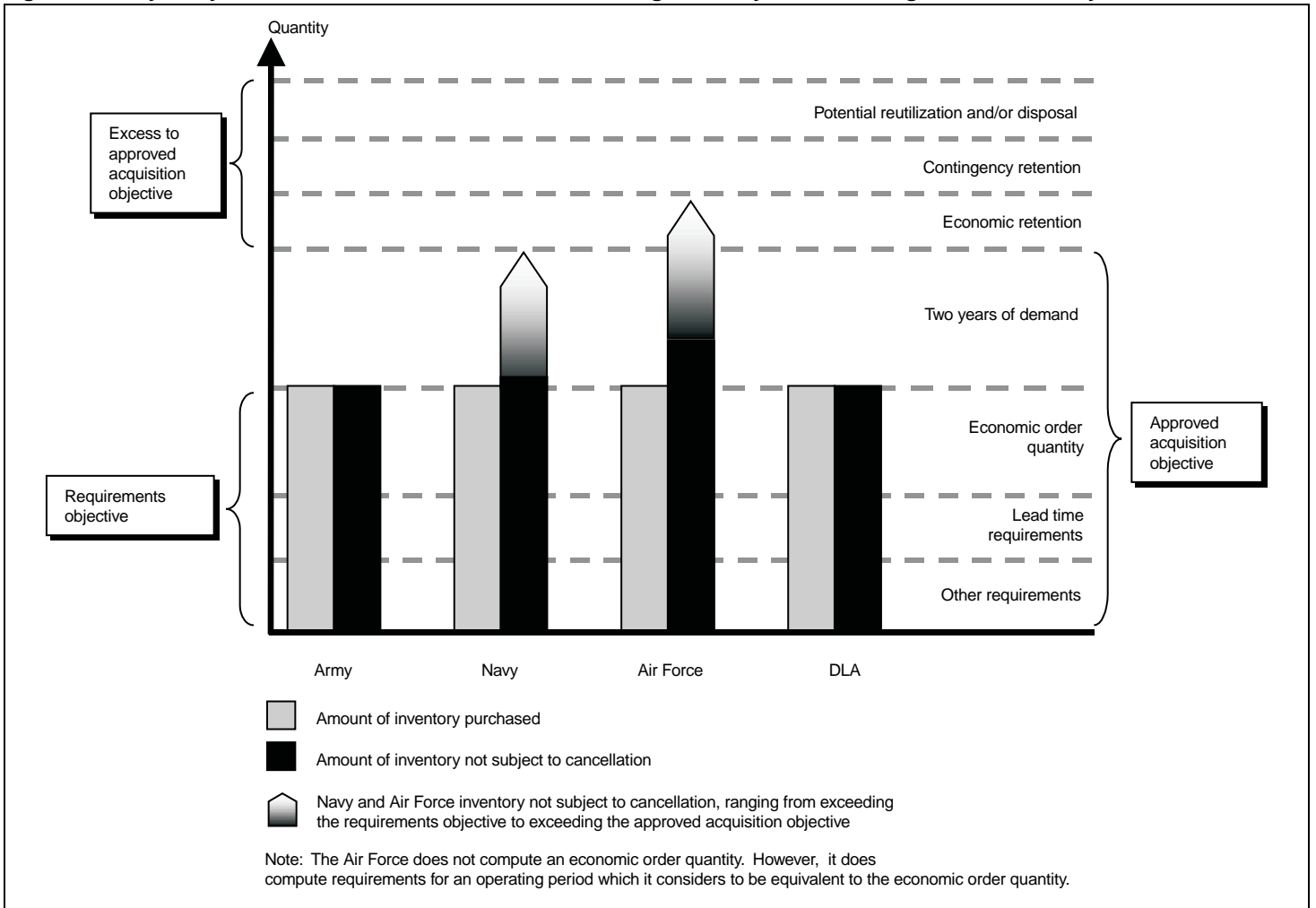
### The Services' and DLA's Criteria Limit Excess Inventory on Order Considered for Cancellation

The criteria that the military services and DLA use to consider excess inventory on order for cancellation impose different limits on the amount of excess inventory on order to be analyzed for cancellation. Figure 6 shows that while the services and DLA purchase inventory to satisfy the requirements objective, only the Army and DLA use that objective to identify inventory on order to consider for cancellation. The Navy and Air



Force cancellation criteria resulted in considering for cancellation excess inventory on order ranging from quantities that exceeded the requirements objective to quantities that exceeded the approved acquisition objective. Thus, the Navy and Air Force would not even consider canceling orders for excess inventory on order that the Army and DLA would consider. The Navy uses the higher cancellation criteria to preclude canceling orders for items that may be needed as demand fluctuates. The Air Force is considering reducing its levels. Appendix II contains a more detailed discussion of the military components' criteria for considering excess inventory on order for cancellation.

Figure 6: Army, Navy, Air Force, and DLA Criteria for Purchasing Inventory and Canceling Excess Inventory on Order



DLA and the services also exclude low-value excess inventory on order from consideration for cancellation in order to focus managers' efforts on higher-value excess inventory on order, in an effort to maximize savings from canceling orders and to reduce manager workloads. While this practice does reduce workloads, it also results in the receipt of millions of dollars of inventory on order in excess of their requirements objective that becomes part of DOD's inventory on hand.

Depending on the item, DLA's inventory management model requires that on-order quantities exceed an item's economic order quantity by 25 to 100 percent, and the excess must meet minimum dollar values ranging from \$400 to \$50,000 in order to be considered for cancellation. As shown in table 3, the DLA and Richmond Supply Center criteria precluded review of \$147.8 million of inventory due in<sup>8</sup> that exceeded the requirements objective. The minimum dollar and percentage criteria reduced workload by preventing 34,826 items from being considered for cancellation. Some of the excess inventory on order not considered for cancellation will become part of DLA's inventory, even though it is not needed.

**Table 3: Defense Supply Center Richmond Items Identified for Manager Review**

Dollars in millions

	Items		Excess due in	
	Number	Percent	Reported value	Percent
Identified for review	5,309	13	\$550.3	79
Not identified for review	34,826	87	147.8	21
<b>Total</b>	<b>40,135</b>		<b>\$698.1</b>	

Source: DOD inventory records.

In addition, the Center has a budget policy that managers not routinely cancel or reduce contracts under \$10,000. For example, DLA had a requirements objective for 43 dial and light assemblies used on the T-37 aircraft. Forty assemblies, valued at \$798 each, were on hand and an additional 15 were on order. The manager did not take action to cancel the

<sup>8</sup>The data that DLA provided on inventory due in did not distinguish between inventory on order and inventory that was in transit. Based on the audit work that we did, we believe that a small portion of the due-in items and values did not represent items being purchased.

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12 assemblies on contract that exceeded the requirements objective because the \$9,600 excess on order was less than the \$10,000 minimum.

In contrast, the Army's Aviation and Missile Command, Huntsville, Alabama, has much lower minimum dollar limits. The Command identifies all missile item excesses valued at \$1 or more and all aviation item excesses valued at \$55 or more for cancellation review. Managers, however, are expected to focus their efforts on canceling higher value excesses first.

The Navy currently identifies excesses that are valued at \$1,000 or more for managers to review but is considering increasing the minimum dollar value to \$5,000 due to workload concerns. The Air Force policy, on the other hand, is that all items with excess inventory on order will be reviewed for cancellation. However, as discussed earlier, for items reviewed in the September 1999 time frame, the Air Force required managers to review orders for excess inventory on order only if they were valued at \$100,000 or more.

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### Infrequent Use of Termination Models Raises Questions About Their Effectiveness

The Army, Air Force, and DLA have models designed to determine whether it is more economical to cancel an order for excess inventory on order or receive the order and store it as part of inventory. Although we did not validate the models used, we found that they varied in design and the data used to determine the economic benefit of canceling orders. For example, the Army and DLA consider obsolescence cost,<sup>9</sup> whereas the Air Force does not. The Air Force, unlike the Army and DLA, considers the item's cost when procuring the item in the future. DLA uses its termination model consistently but cancels few orders as a result, the Army and Air Force seldom use theirs, and the Navy quit using its model in 1993. Thus, the effectiveness of the models is in question.

The DLA model is integrated into its automated inventory management model and automatically determines whether or not it is economical to cancel contracts for items that have inventory in excess of the requirements objective and that exceed DLA's percentage and low-dollar criteria. Results are automatically provided to managers at their computerized workstations. As a result, the termination model evaluates all DLA items. DLA reported that, from July through September 1999, its model referred \$696 million of inventory in excess of the requirements

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<sup>9</sup>The obsolescence cost is the loss of an item's value when it is no longer needed.

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objective to managers for review. Managers recommended contract cancellation for \$42 million of the amount, but less than \$11 million of excess inventory on order was actually canceled.

The Army and Air Force models are separate from the automated inventory management models and managers must manually enter data such as lead times, requirements, assets, and storage costs to determine whether or not it is economical to cancel or reduce contracts for excess inventory on order. Army headquarters officials told us that their model was not widely used. Of the 49 Army items with \$30.9 million of excess on order we reviewed, we identified 5 items for which the model was used. In two of these cases, use of the model resulted in the cancellation of inventory worth \$799,450. In other cases, managers decided not to cancel orders based on their knowledge of the items. Similarly, the Air Force termination model recommended the cancellation of contracts for excess inventory on order in 6 out of 25 cases where the model was actually used. A 1997 Air Force review of excess on order found that the model was generally not used correctly or at all. According to the Air Force, \$12.4 million of contracts were canceled in fiscal year 1999. Army officials were unable to provide overall data on the number and value of excess on order inventory canceled.

Even though the Navy discontinued using its termination model in 1993, the Navy canceled contracts for \$28 million in excess inventory on order in fiscal year 1999. According to Navy officials, the Navy suspended the use of its model because it overestimated contract termination costs and thus eliminated contracts from being considered for cancellation. Instead, the Navy decided to pursue the cancellation of all contracts that met its criteria.

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### Frequency of Reviews of Excess on Order Limits Cancellations

The military components' frequencies for reviewing excess inventory on order for cancellation ranges from monthly to quarterly and varies by component. For example, at the Army Aviation and Missile Command, missile parts are identified for review on a quarterly basis; aviation parts and other commodities are examined every 6 weeks. The Navy evaluates ship parts monthly but evaluates aviation parts quarterly. DLA identifies all items with inventory on order in excess of requirements in February, May, August, and November. For the intervening 2 months, only those items that had not been previously identified as excess are highlighted for review. The Air Force reviews all inventory items quarterly.

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Contractor costs are one of the factors used in the military components' termination models to determine whether or not a contract is economical to cancel. The longer it takes to make a decision to terminate a contract, the more costs the contractor incurs and the less likely it will be economical to cancel the contract. For example, an Air Force contracting official said that each day cancellation was delayed on a contract for torque landing gear collars, the contractor incurred an additional \$5,000 in costs that the government would have to pay to cancel the contract.

Studies of Air Force and DLA cancellation efforts show that when managers deferred making cancellation decisions, contractor costs increased and it was frequently too late to economically terminate. For example, a 1997 internal Air Force study determined that managers often deferred cancellation decisions until it was no longer economical to cancel. Also, the DOD Inspector General reported in 1998 that prompt action is critical to minimize the government's costs. To illustrate this point, the report pointed out that DLA's Columbus Supply Center had processed 69 of 119 items identified for cancellation within 30 days, whereas DLA's Richmond Center had processed 10 out of 132 within 30 days.<sup>10</sup> The cancellation rate for the Columbus items was more than double the rate for the Richmond items because contractors' costs increased during the delays.

In some instances, the need to validate assets and requirements can delay the timeliness of cancellation efforts. For example, in October 1996, the manager for a bracket and bubble assembly used on the C-135 aircraft ordered 346 assemblies based on requirements from Warner Robins Air Force Base. The item was identified for cancellation in October 1998. Because the requirements had to be validated, the manager attempted to contact the Air Force customer, who did not respond to the information request. As a result, the order was not canceled, and as of December 1999, DLA had 97 assemblies, valued at \$1,441 each, on hand that exceeded the requirements objective.

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<sup>10</sup> *Contract Terminations at Defense Supply Center Columbus and Defense Supply Center Richmond*, DOD Inspector General, Report Number 98-172, July 2, 1998.

## Services and DLA Goals for Reducing Excess Inventory on Order Vary and Are Not Comparable

The services and DLA have made efforts to reduce excess inventory on order and have established goals to measure their progress. The goals, shown in table 4, range from 2 percent of total inventory on order to 10 percent.<sup>11</sup> However the goals are not comparable because, as discussed earlier, each of the services and DLA use different criteria to identify the amount of excess inventory on order. For example, the Army’s goal was based on excess inventory on order above the requirements objective, while the Air Force’s goal was based on excess inventory on order above the approved acquisition objective. The Navy and DLA also base their goals on the approved acquisition objective.

**Table 4: Service and DLA Goals for Reducing Excess Inventory on Order**

Component	Goals, expressed as a percentage of total inventory on order
Army	10
Navy	5.5 or 7
Air Force	4
DLA	2 to 5.8

Source: DOD data.

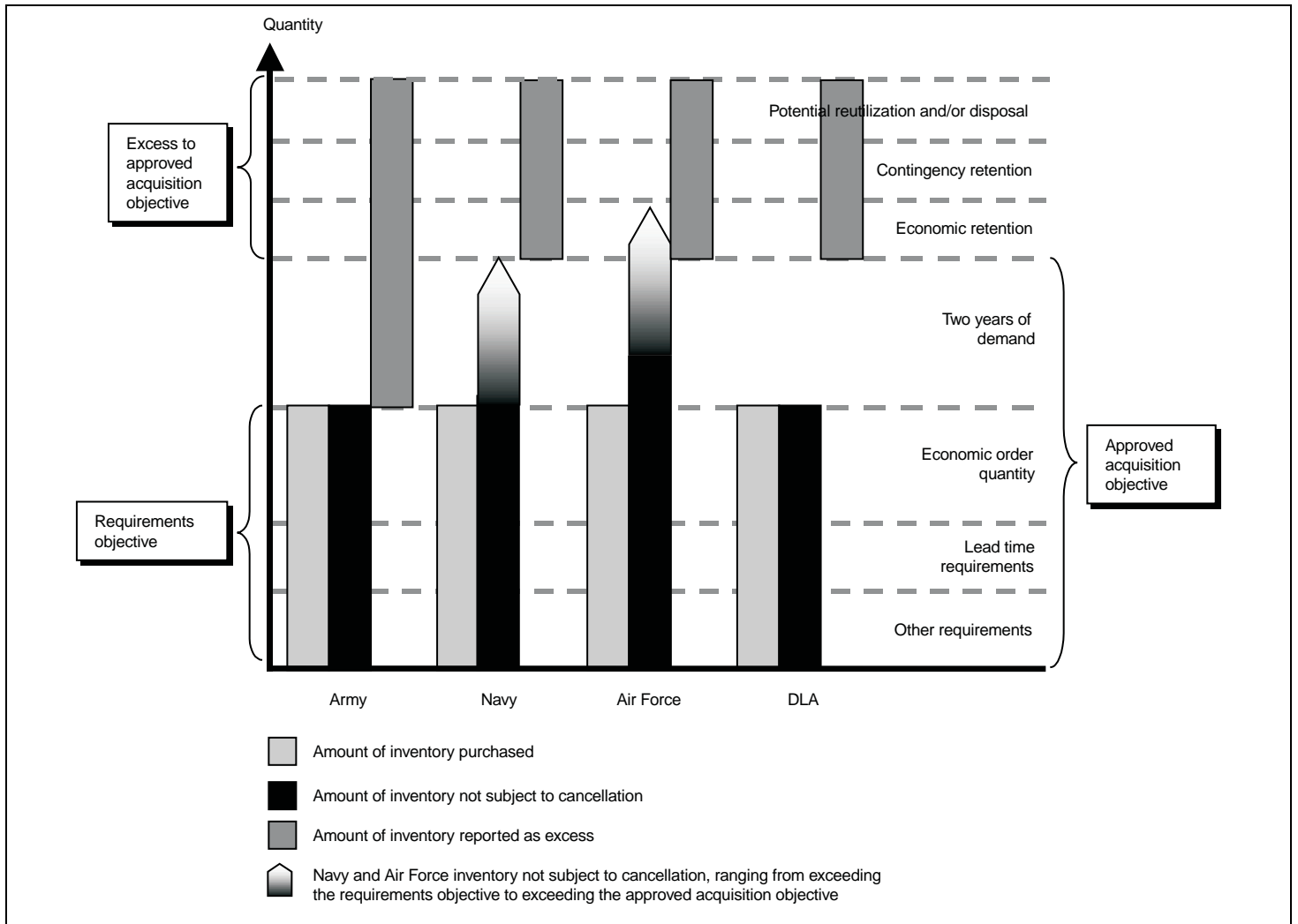
The services and DLA have initiated a variety of efforts to reach their goals. For example, the Army Aviation and Missile Command initiated a special one-time project to review the 30 items in its inventory with the highest amount of excess on order. The Navy has long maintained a history of tracking excess items on order against its goals. The Air Force initiated processes to define the causes of excess items on order, including high-dollar items, data errors, and untimely cancellations. DLA initiated an improvement program, which included establishing an oversight coordinator position, reporting measurements against goals for reducing excess inventory on order, and increasing efforts to reduce data errors.

Figure 7 shows that the services and DLA use different criteria to purchase inventory, identify the amount of inventory not subject to cancellation, and

<sup>11</sup>The Army and Air Force established goals for their total inventory. The Navy established goals of 7 percent for repairable items and 5.5 percent for consumable items. DLA has established specific goals for each of its commodity areas such as clothing, medical, and electronic parts.

report excess inventory on order. Only the Army makes purchases, identifies excess inventory on order for cancellation, and measures its progress based on the requirements objective. While the Navy, Air Force, and DLA also make purchases based on the requirements objective, they identify items for cancellation and report excess inventory on order at levels ranging from quantities that exceed the requirements objective to quantities that exceed the approved acquisition objective.

Figure 7: Army, Navy, Air Force, and DLA Criteria for Purchasing Inventory and for Canceling and Reporting Excess Inventory on Order



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In addition, the Air Force and DLA measures did not include all of the items managed. The Air Force excludes items managed by contractors, while DLA does not report on items that have no or low demands.

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## Conclusions

Although the services and DLA were placing orders consistent with their inventory management models, the dynamics of DOD's inventory and the mechanics of the management models will always result in some excess inventory on order. The services and DLA have recognized that excess inventory on order is a problem and have initiated some corrective actions. However, the services and DLA have set up a variety of processes that make efficient management of excess inventory on order difficult. The services' and DLA's inventory management models erroneously identified a large number of items for cancellation, and managers reviewed and validated information only for items that the models identified. As a result, neither DOD, nor the military components know whether managers are focusing their efforts on the proper items. Because the military components' processes identified excess inventory on order for cancellation at different levels and excluded low-dollar excesses, millions of dollars of excess inventory on order were not canceled. This situation contributes to the accumulation of higher levels of excess inventory on hand. Also, some components have longer intervals between item reviews, causing additional contractor costs to be incurred and making the cancellation of contracts less likely to be economical. Termination models were used inconsistently and often did not recommend cancellation of excess inventory on order. Although the services and DLA have goals for reducing excess inventory on order, they report excess inventory on order at different levels and do not include all excess on order in their measures. As a result, consistent DOD-wide management oversight of excess inventory on order is difficult to achieve.

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## Recommendations

Because of the difficulties the services and DLA face in identifying and canceling excess inventory on order, we recommend that the Secretary of Defense, in conjunction with the Secretaries of the Army, Navy, and Air Force, and the Director of the Defense Logistics Agency, review and improve their processes, focusing on areas such as

- the accuracy of inventory management records;



- 
- the level at which the services and DLA 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.

In addition, to improve DOD's oversight of excess inventory on order, we recommend that the Secretary of Defense require the services and DLA 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.

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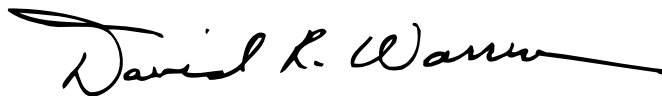
## Agency Comments

In written comments on a draft of this report, DOD agreed with our recommendations and cited a number of actions that it plans to take. DOD's comments are reprinted in their entirety in appendix III.

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We are sending copies of this report to the appropriate congressional committees; the Honorable William S. Cohen, Secretary of Defense; the Honorable Louis Caldera, Secretary of the Army; the Honorable Richard Danzig, Secretary of the Navy; the Honorable F. Whitten Peters, Secretary of the Air Force; Lieutenant General Henry T. Glisson, Director, DLA; and the Honorable Jacob J. Lew, Director, Office of Management and Budget.

Please contact me at (202) 512-8412 if you have any questions. Key contributors to this report were Charles Patton, Jr.; Gary Billen; Louis Modliszewski; and David Keefer.



David R. Warren, Director  
Defense Management Issues

# Objectives, Scope, and Methodology

Senate Report 106-50 relating to the National Defense Authorization Act for Fiscal Year 2000 mandated that we review Army, Navy, Air Force, and Defense Logistics Agency (DLA) inventory on order that exceeded requirements. Specifically, the report required GAO to (1) determine the extent to which orders exceeded requirements when the orders were placed and (2) assess the processes for canceling orders that exceeded requirements.

To identify the extent to which orders exceeded requirements when the orders were made, we reviewed 490 Army, Navy, Air Force, and DLA items on order that exceeded their requirements objectives (the amount of inventory for which there were requirements when the orders were made) as shown in table 5.

**Table 5: Reported Value of Items Reviewed**

Dollars in millions		
Component	Number of items reviewed	Reported value of excess inventory on order
Army	49	\$30.9
Navy	200	48.3
Air Force	160	162.4
DLA	81	133.1
<b>Total</b>	<b>490</b>	<b>\$374.7</b>

Note: The Army data were as of September 30, 1998; the Navy data were as of September 30, 1996; the Air Force data were as of September 30, 1997; and the DLA data were as of October 28, 1999.

Source: Department of Defense (DOD) inventory records.

Our review covered spare and repair parts and other items that support DOD's operating forces on land, at sea, and in the air. We did not include such items as petroleum, oil, and lubricants or items in Marine Corps and retail level inventories in our analysis because they represent a small part of DOD's overall inventory or the reorder point and economic order quantity requirements were not available for these items.

For the Army, Navy, and Air Force we used computerized inventory stratification reports to identify items with excess inventory on order for review. Stratification reports match on-hand and due-in inventory to requirements and are used for budgeting and reporting purposes. For DLA, we used extracts of data from inventory files to identify items with excess inventory on order. For the four components, we selected items that had the highest values of inventory on order in excess of the requirements objective and a cross section, based on values, of the remaining items at each of the locations visited. For the Navy and Air Force, we used items reviewed as part of prior work that addressed similar objectives.<sup>1</sup> The items reviewed were managed by the Army Aviation and Missile Command, Huntsville, Alabama; the Naval Inventory Control Point's Mechanicsburg and Philadelphia, Pennsylvania, offices; the Air Force's Air Logistics Centers at Oklahoma City, Oklahoma, San Antonio, Texas, and Ogden, Utah; and DLA's Defense Supply Center, Richmond, Virginia. At these locations, we reviewed documentation used to support the purchases and discussed purchase justifications with responsible managers.

We also used the 490 items to assess the processes used to cancel orders that exceed requirements. We reviewed documents that managers use to determine whether orders need to be canceled and discussed the documents and decisions with the managers. We did not evaluate the validity of the economic termination models used by the military services and DLA.

For overall inventory data such as the amount of excess inventory on order, we analyzed September 30, 1999, summary inventory stratification reports for items managed by the military services and DLA. We did not validate any of the military components' automated inventory databases used to create the reports; however, we did note database discrepancies during our review of documents and discussions with managers relating to individual items. In order to present the military components' inventory values on a comparable basis, we removed surcharges for operating costs to value inventory items at the latest acquisition cost.

We also met with Army, Navy, Air Force, and DLA headquarter-level officials responsible for inventory management to discuss overall efforts to reduce excess inventory on order, including efforts to set goals for

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<sup>1</sup>*Navy Inventory Management* (GAO/NSIAD-98-86, Apr. 30, 1998) and *Defense Inventory* (GAO/NSIAD-00-5, Nov. 10, 1999).

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**Appendix I**  
**Objectives, Scope, and Methodology**

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reducing excess inventory on order and to measure progress in meeting those goals.

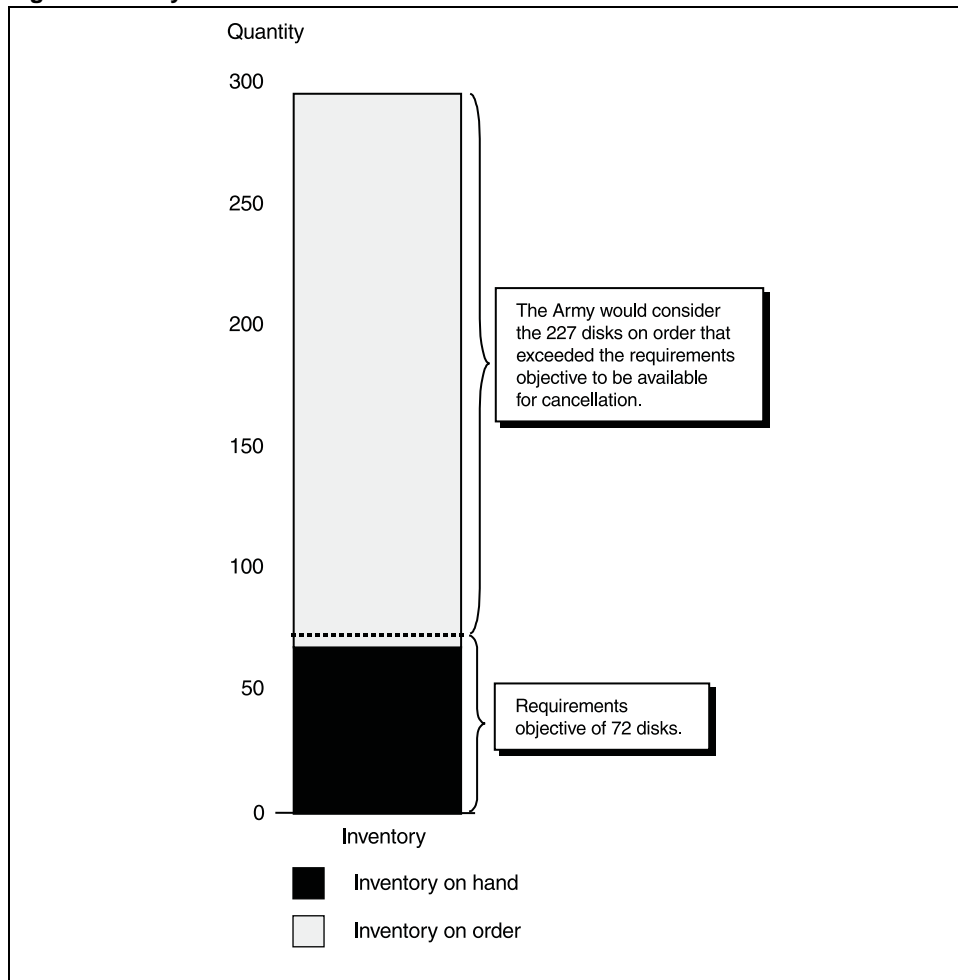
We performed our review from July 1999 through May 2000 in accordance with generally accepted government auditing standards.

# Military Service and Defense Logistics Agency Criteria for Canceling Excess Inventory on Order

## Army and Defense Logistics Agency Cancellation Criteria

The Army and Defense Logistics Agency consider inventory on order that exceeds an item's requirements objective—the quantity they would normally buy—as subject to cancellation. For example, a December 1999 Army requirement computation for a disk used on the gas generator turbine rotor of the T701C engine recommended a cancellation of 227 disks that were on order. At that time, the disks, valued at \$7,107 each, had a requirements objective of 72 disks. The Army had 69 disks on hand and another 230 on order of which only 3 were needed. Figure 8 shows the requirements objective and quantity of disks the Army would consider for cancellation.

**Figure 8: Army Disks Considered for Cancellation**

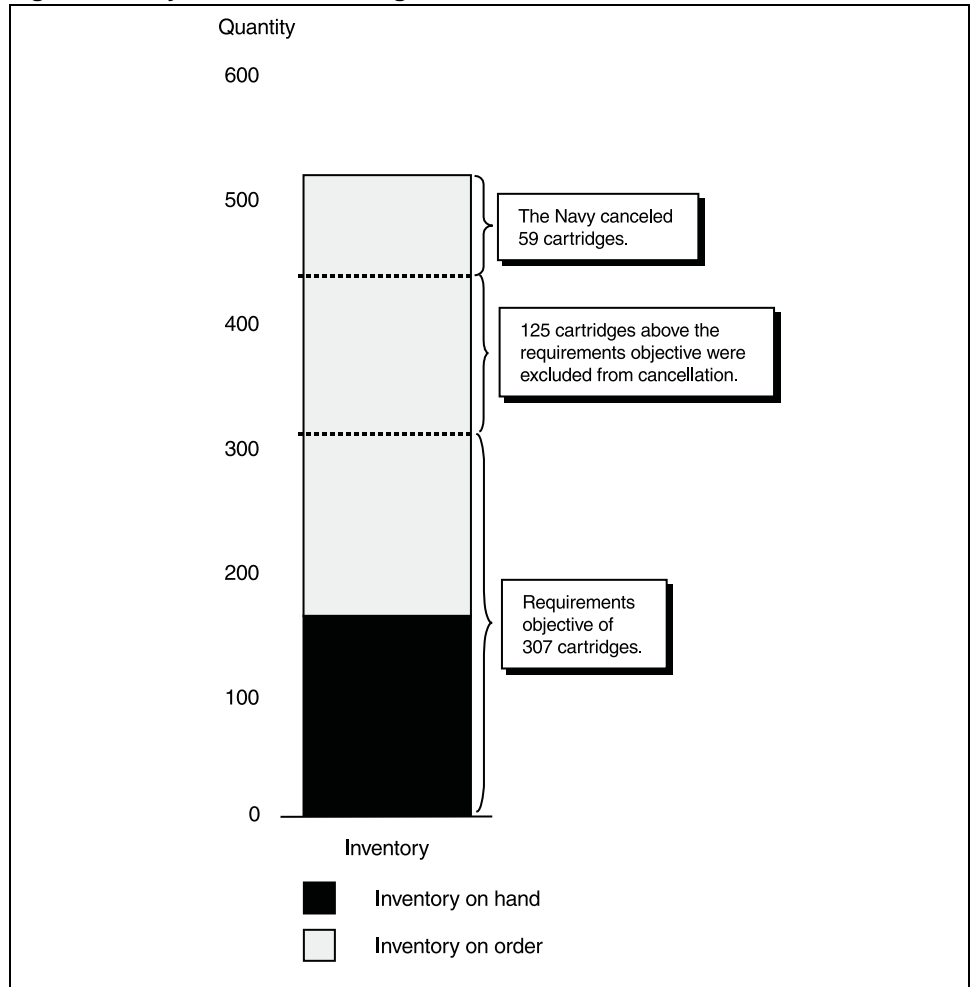


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## **Navy Cancellation Criteria**

In April 1998, we reported that the Navy adds a “protection level,” representing as much as 2 years of projected demand, to requirements before considering inventory on order as excess for cancellation. The Navy cancels only the amount of the purchases that exceeds the protection level. For contracts, the Navy defines the protection level as the greater of 2 years of forecasted usage or the item’s economic order quantity. By adding a protection level, the Navy prevents inventory on order above the requirements objective from being considered for cancellation. For example, in June 1996, the Navy had 183 pilot valve cartridges on hand and 308 on order. The item’s reorder point requirement was 264, its economic order quantity was 43, and 2 years of forecasted usage was 168. Figure 9 shows that because the 2 years of projected demand exceeded the item’s economic order quantity, 125 cartridges—costing \$723 each—above the requirements objective were not considered for cancellation.

**Figure 9: Navy Pilot Valve Cartridges Considered for Cancellation**



In December 1999, Navy officials told us that the Navy is considering the impact and benefits of reducing the protection level from 8 quarters to 6 quarters of forecasted usage.

## Air Force Cancellation Criteria

In November 1999, we reported on the Air Force's efforts to cancel orders that exceeded requirements. The Air Force considers inventory on order for cancellation only if it exceeds what the Air Force calls the "worldwide termination level." This level includes requirements for (1) a buy period, (2) a termination period, and (3) an additional quantity. The buy period represents the economic order quantity and lead time (the time needed to

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**Appendix II**  
**Military Service and Defense Logistics**  
**Agency Criteria for Canceling Excess**  
**Inventory on Order**

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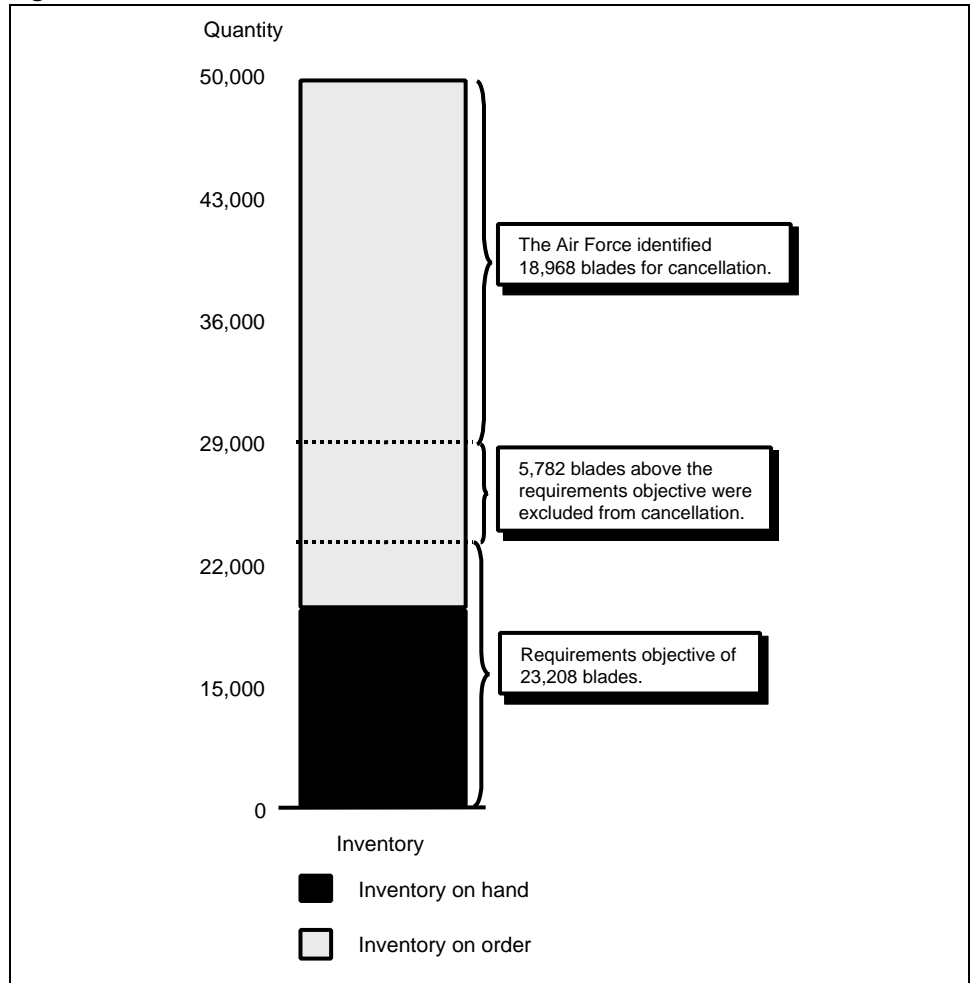
purchase and receive inventory). Therefore, the buy period is similar to the requirements objective used by the Army, Navy, and DLA. The Air Force adds an additional 12 months of requirements to the buy period to determine what it calls the termination period. To calculate the worldwide termination level, the Air Force adds an additional quantity based on the greater of certain buy or termination period requirements.

By adding the termination period and the additional requirements to the buy period to identify inventory on order for cancellation, the Air Force also protects inventory on order above the requirements objective from being considered for cancellation. For example, a September 1997 requirement computation showed that Air Force had 17,709 rotor blades for the T-33 aircraft engine either on hand or available from repair and an additional 30,249 blades on order. The worldwide termination level consisted of 28,990 blades: (1) buy period requirements (requirements objective) for 23,208 blades, (2) termination period requirements of 5,757 blades, and (3) additional requirements for 25 blades. Based on the worldwide termination level, 18,968 blades were considered for cancellation. As shown in figure 10, the termination period and the additional requirements prevented 5,782 blades, valued at \$124 each, above the requirements objective from being considered for cancellation.



**Appendix II**  
**Military Service and Defense Logistics**  
**Agency Criteria for Canceling Excess**  
**Inventory on Order**

**Figure 10: Air Force Rotor Blades Considered for Cancellation**



In response to our report on the Air Force's excess inventory on order, the Secretary of the Air Force said that he had tasked the Air Force Materiel Command to address our recommendations to examine the need for lengthy operating and termination periods and the worldwide termination level.

# Comments From the Department of Defense

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



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OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON  
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19 JUN 2000


Mr. David R. Warren  
Director, Defense Management Issues  
National Security and International  
Affairs Division  
U.S. General Accounting Office  
Washington, D.C. 20548

Dear Mr. Warren:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "DEFENSE INVENTORY: Process for Canceling Excess Inventory on Order Needs Improvement," dated May 18, 2000 (GAO Code 709429/OSD Case 2009). The DoD generally concurs with the draft report and appreciates GAO's effort to lay to rest some long-held misunderstandings in this area. However, the DoD is concerned that the draft report does not adequately describe the differences between Air Force computation methods and those used by other DoD Components. In particular, Figure 6 should be annotated to acknowledge that Air Force uses a different computation method.

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

Sincerely,

  
for Roger W. Kallock  
Deputy Under Secretary  
of Defense (Logistics)

Enclosure



See comment 1.

GAO DRAFT REPORT - DATED MAY 18, 2000  
GAO CODE 709429/OSD CASE 2009

"DEFENSE INVENTORY: PROCESS FOR CANCELING EXCESS INVENTORY  
ON ORDER NEEDS IMPROVEMENT

DEPARTMENT OF DEFENSE COMMENTS

**RECOMMENDATION 1:** Because of the difficulties the Services and DLA face in identifying and canceling excess inventory on order, the GAO recommended that the Secretary of Defense in conjunction with the Secretaries of the Army, Navy, and Air Force, and the Director of the Defense Logistics Agency review and improve their processes, focusing on areas such as:

- The accuracy of inventory management records;
- The level at which the Services and DLA 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 review for identifying excess items on-order; and
- The validity and use of the Military Components' termination models in making economic analyses.

**DoD RESPONSE:** Concur. The Office of the Secretary of Defense will request by June 30, 2000, that the Military Departments and DLA review their processes for identifying and reducing or canceling orders when requirements for secondary items decrease, and implement improvements where appropriate.

**RECOMMENDATION 2:** In addition, to improve DoD's oversight of excess inventory on order, the GAO recommended that the Secretary of Defense require the Services and DLA 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.

**DoD RESPONSE:** Concur. The Office of the Secretary of Defense will request by June 30, 2000, that the Military Departments and DLA identify inventory on order that exceeds both the requirements objective and the approved acquisition objective.

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The following is GAO's comment on the Department of Defense's letter dated June 19, 2000.

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**GAO Comment**

1. We added a note to figure 6 to clarify that while the Air Force does not compute an economic order quantity, it does compute requirements for an operating period, which it considers to be equivalent to the economic order quantity.

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# Related GAO Products

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*Department of Defense: Progress in Financial Management Reform* (GAO/T-AIMD/NSIAD-00-163, May 9, 2000).

*Defense Inventory: Improvements Needed to Prevent Excess Purchases by the Air Force* (GAO/NSIAD-00-5, Nov. 10, 1999).

*Defense Inventory: Management of Repair Parts Common to More Than One Military Service Can Be Improved* (GAO/NSIAD-00-21, Oct. 20, 1999).

*Financial Management: Better Controls Essential to Improve the Reliability of DOD's Depot Inventory Records* (GAO/AIMD-99-132, June 28, 1999).

*Defense Inventory: Status of Inventory and Purchases and Their Relationship to Current Needs* (GAO/NSIAD-99-60, Apr. 16, 1999).

*Defense Inventory: DOD Could Improve Total Asset Visibility Initiative With Results Act Framework* (GAO/NSIAD-99-40, Apr. 12, 1999).

*Defense Inventory: Navy's Procedures for Controlling In-Transit Items Are Not Being Followed* (GAO/NSIAD-99-61, Mar. 31, 1999).

*Major Management Challenges and Program Risks: Department of Defense* (GAO/OCG-99-4, Jan. 1999).

*High Risk Series: An Update* (GAO/HR-99-1, Jan. 1999).

*Inventory Management: More Information Needed to Assess DLA's Best Practices Initiatives* (GAO/NSIAD-98-218, Sept. 2, 1998).

*Navy Inventory Management: Improvements Needed to Prevent Excess Purchases* (GAO/NSIAD-98-86, Apr. 30, 1998).

*Inventory Management: DOD Can Build on Progress by Using Best Practices for Repairable Parts* (GAO/NSIAD-98-97, Feb. 27, 1998).

*Defense Inventory Management: Expanding Use of Best Practices for Hardware Items Can Reduce Logistics Costs* (GAO/NSIAD-98-47, Jan. 20, 1998).

*Defense Logistics: Much of the Inventory Exceeds Current Needs* (GAO/NSIAD-97-71, Feb. 28, 1997).

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