United States General Accounting Office

GAO

Report to the Chairman, Subcommittee on Oversight of Government Management, Committee on Governmental Affairs, U.S. Senate

June 1993

COMMERCIAL PRACTICES

DOD Could Save Millions by Reducing Maintenance and Repair Inventories

GAO/NSIAD-93-155

GAO

United States
General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

B-252193

June 7, 1993

The Honorable Carl Levin
Chairman, Subcommittee on
Oversight of Government Management
Committee on Governmental Affairs
United States Senate

Dear Mr. Chairman:

This report was prepared as part of your request that we continue to compare commercial logistics practices with similar Department of Defense operations. It summarizes the results of our review of inventory management practices used by leading private sector companies and the Department of Defense to provide construction, general, and industrial supplies to industrial centers.

We are sending copies of this report to appropriate congressional committees; the Secretaries of Defense, the Army, the Navy, and the Air Force; the Director, Office of Management and Budget; and other interested parties. We will also make copies available to others on request.

If you have any questions, please call me on (202) 512-8412. Other major contributors are listed in appendix III.

Sincerely yours,

Donna M. Heivilin
Director, Defense Management and
NASA Issues

Executive Summary

Purpose

The value of the Department of Defense's (DOD) secondary inventories, which include spare parts for weapon systems and consumable items such as nuts and bolts, increased $60 billion between 1980 and 1988. Because of this increase, the Chairman, Subcommittee on Oversight of Government Management, Senate Committee on Governmental Affairs, asked GAO to examine DOD's logistics practices involving construction, general, and industrial supplies and identify commercial practices that DOD could adopt to improve its operations and reduce inventory costs.

Background

DOD operates a massive logistics system to buy, store, and distribute inventory items. In this system, DOD manages over 4 million types of consumable items, of which over 3.2 million are managed at the wholesale level by the Defense Logistics Agency (DLA). The Agency sells these items to the military services, which also store consumable items at the retail level in maintenance facilities. The services use many of the items to maintain and repair their land vehicles, ships, airplanes, and other equipment on a routine basis. The services' maintenance facilities are comparable to private sector industrial plants in that they use the same types of consumable items.

Results in Brief

At both wholesale and retail locations, DOD stores duplicate maintenance and repair inventory that can be reduced using commercial practices. At one military facility GAO examined, DOD stored enough retail-level inventory to last approximately 2 years, which could be supplemented with another 2 years of wholesale-level inventory. Storing and managing this inventory costs DOD millions of dollars. In addition, as DOD requirements change, some inventory items become old or excess to DOD's needs. Although DOD has used some commercial practices, such as long-term contracting, direct deliveries, and electronic ordering, it has not expanded these practices on a DOD-wide basis.

Two private sector companies GAO visited have achieved significant savings by adopting modern inventory management practices. These practices include locating suppliers at a "supplier park" near the industrial centers, which allows for direct deliveries of supplies to the centers, and establishing electronic data interchange systems to streamline the ordering, bill-paying, and distribution process. These companies do not use a wholesale system to store and distribute consumable items and have reduced or eliminated the need to store large quantities of these items at their industrial centers.

Principal Findings

DOD Retains Duplicative Supplies of Maintenance and Repair Items

Of DLA's $6.4 billion inventory of construction, general, and industrial supplies, about $2 billion is invested in consumable maintenance and repair items. This wholesale level maintenance and repair inventory could last an average of more than 2 years, assuming the current demand remains the same. Some of these items, however, have been stored in DLA warehouses since the 1960s.

To identify the cause of excess inventory in this wholesale system, GAO examined 27 types of consumable items worth more than $20 million. DLA's records indicate that these items will satisfy DOD's needs for about 21 years and that items worth about $11 million are excess to DOD's needs. GAO found that much of this excess resulted because DLA bought and stored inventory based on past demand, and the services' need for the inventory dropped significantly. Thus, DLA has spent millions of dollars to purchase, maintain, and store inventory that now exceeds DOD's needs.

In addition to holding excess inventory, this wholesale system is expensive to operate. In fiscal year 1992, DLA charged the military services about $715 million for services such as contract administration, item management, and material handling of construction, general, and industrial supplies. Some of these expenses relate to purchasing items in large quantities to obtain discounts for volume buying.

The Army, the Navy, and the Air Force also hold, at or near each of their industrial centers, maintenance and repair items (retail inventory) that in some cases could satisfy their needs for many years. For example, the Air Force's Oklahoma City Air Logistics Center stores valves, bearings, pipes, hardware, and other items that could last for an average of about 5 years. The Army and the Navy also held similar supplies that could last an average of 1 to 3 months (Army) to almost 3 years (Navy) at the locations GAO visited.

DOD Efforts to Use Commercial Practices Can Be Expanded

Although DOD has initiated several programs to adopt commercial practices, these initiatives represent a small portion of DOD's overall logistics operations. DOD has established long-term contracts with suppliers, used electronic data systems to reduce paperwork and speed the ordering process, and established direct delivery programs with

contractors. However, DOD has applied these practices inconsistently. For example, although the Defense General Supply Center in Richmond, Virginia, has established direct deliveries from vendors for approximately 34 percent of its annual orders, the Defense Construction Supply Center in Columbus, Ohio, has established direct delivery terms for less than 1 percent of the orders for items it normally stocks.

According to DOD officials, government procurement requirements inhibit the use of commercial practices in DOD logistics operations. These requirements, some of which are based on federal laws, serve a variety of objectives, including support of social and economic programs, full and open competition, and the purchase of items at the lowest unit cost. Current DOD initiatives, however, demonstrate that government procurement requirements can be satisfied while establishing new and more efficient business practices.

Private Sector Companies Use New, Cost-Effective Practices

In contrast to DOD, some private sector companies have adopted unique inventory management practices to reduce inventories and save operating expenses. In addition, with direct delivery programs, companies do not maintain supplies at the wholesale level, as DLA does. One company GAO visited—PPG Industries—has established a "supplier park," where 10 of its suppliers provide items as needed throughout each day. This park is in a central location close to PPG's industrial center where the items are used. With the supplier park concept, PPG (1) reduced or eliminated the need to store inventory at its industrial center, (2) increased the suppliers' responsibility for managing and maintaining inventory, (3) developed electronic communications systems, and (4) standardized the types of items used. As a result, PPG eliminated $4.5 million, or 80 percent, of maintenance and repair inventory and saved $600,000 annually in operating costs.

Another corporation, The Timken Company, reduced inventory levels at one location by $4 million, or 33 percent, by using direct delivery programs and customized agreements with suppliers. Timken has set a goal to reduce its inventory by an additional 50 percent over the next few years by expanding these initiatives and establishing a supplier park facility.

Recommendations

GAO recommends that the Secretary of Defense direct DLA and the military services to develop test programs that will determine the applicability of commercial practices to military industrial centers. GAO recommends that

these efforts include facilities from all three services, encompass all aspects of inventory management, and quantify the costs and benefits of the changes. Among the practices that should be included are

- reducing unnecessary inventory requirements at each center;
- establishing electronic ordering, invoicing, and bill-paying functions between vendors and DOD facilities;
- using supplier parks near DOD facilities that use the supplies; and
- eliminating the need to store supplies in the DLA's depot system.

GAO recommends that after these practices have been tested, the military services tailor the practices at each of the facilities to apply the successful results of the test programs.

Agency Comments

In commenting on a draft of this report, DOD generally agreed with the findings and recommendations and stated that DLA will take the lead in working with the military services to expand the use of commercial practices in meeting DOD requirements for construction, general, and industrial supplies.

Contents

Abbreviations

COPS	Commodity-Oriented Procurement System
DCSC	Defense Construction Supply Center
DGSC	Defense General Supply Center
DISC	Defense Industrial Supply Center
DLA	Defense Logistics Agency
DOD	Department of Defense
GAO	General Accounting Office
POPS	Paperless Order Placement System
SPEDE	SAMMS Procurement by Electronic Data Exchange

Introduction

In 1991, the Department of Defense (DOD) reported that it stored more than $31 billion of consumable items such as clothing, electronics, and industrial items.[1] Using a massive logistics system consisting of depots, warehouses, and other storage locations, DOD manages this inventory and its inventories of other items through the Defense Logistics Agency (DLA) and the military services. Private sector industrial activities also use consumable items for similar operations but use different techniques for managing their inventories.

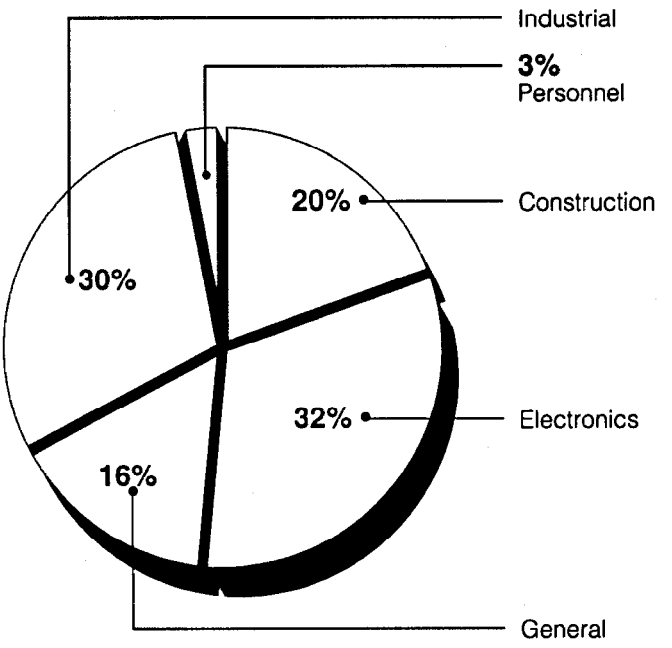
DOD's Logistics System

DOD's logistics system reflects its overall inventory management practice of buying and storing enough inventory in wholesale and retail systems to meet the projected needs of the military services. Through this system, DLA manages more than 3.2 million of DOD's 4.4 million consumable items at the wholesale level. To receive, store, and issue these items and other inventories to the military services and other DOD organizations throughout the world every year, DLA maintains over 1,400 warehouses at 30 supply depots and also uses other storage locations.

Consumable items are classified as construction, general, industrial, electronics, or personnel (clothing and textiles, subsistence, and medical) items. As of September 1992, construction, general, and industrial items accounted for 66 percent of the consumable items DLA manages (see fig. 1.1).

[1]Items are considered consumable if they are of low intrinsic value and are not repaired after use.

Figure 1.1: Consumable Items Managed by DLA (as of Sept. 1992)



Note: Figures do not add to 100 percent due to rounding.

DLA estimated that its fiscal year 1992 inventory of construction, general, and industrial items was approximately $6.4 billion.

At the retail level, the military services use large amounts of maintenance and repair supplies for regularly scheduled maintenance activities. For this report, we looked at five groups of maintenance and repair items that are used in civilian and military activities—bearings, safety equipment, tubes and hoses, valves, and hardware such as nuts and bolts (see table 1.1). These supplies account for about 33 percent, or $2.1 billion, of DLA's investment in construction, general, and industrial consumable items.

Table 1.1: DLA's Inventory of Selected Maintenance and Repair Items (as of Sept. 1992)

Dollars in thousands

Item	Construction	General	Industrial	Total
Bearings	0	0	$313,698	$313,698
Safety equipment	0	$37,952	0	37,952
Pipe, tubing, hose	$371,457	0	0	371,457
Valves	282,358	0	0	282,358
Hardware	0	0	1,108,929	1,108,929
Total	**$653,815**	**$37,952**	**$1,422,627**	**$2,114,394**

Each of the three services operates maintenance facilities to repair land vehicles, ships, and aircraft. The Air Force has five logistics centers that share responsibilities for the maintenance and repair of Air Force aircraft. The Navy operates eight shipyards and six aviation depots, and the Army has seven locations for maintenance and repair of its vehicles and aircraft. Weapon systems maintained by the services require regularly scheduled maintenance to keep them in satisfactory operating condition. Large-scale, time-consuming maintenance, such as a major overhaul of an aircraft structure or engine, is usually done at these maintenance facilities. The military industrial centers stock maintenance and repair supplies in warehouses at or near industrial centers until needed by the mechanics. The mechanics also hold some of these same items nearby in individual storage bins.

Private Sector Logistics Practices

Like the military services, the private sector has major industrial centers that use similar maintenance and repair supplies for regularly scheduled maintenance of equipment. Faced with increasing costs associated with acquiring supplies, spare parts, and raw materials, some private sector managers have developed new inventory management techniques to eliminate the need to buy, store, and distribute large quantities of supplies. The private sector has tried these new techniques on maintenance and repair items because these items are generally standard and are commonly stocked by several suppliers and because they are used in large quantities on a regular basis. In addition, bulky maintenance and repair items require a significant amount of storage space.

Previous GAO Reports

This report is the fourth in a series of reports about the potential use of commercial logistics practices within DOD's logistics management system. Three reports that have been issued are Commercial Practices: Opportunities Exist to Reduce Aircraft Engine Support Costs

(GAO/NSIAD-91-240, June 28, 1991); DOD Medical Inventory: Reductions Can Be Made Through the Use of Commercial Practices (GAO/NSIAD-92-58, Dec. 5, 1991); and DOD Food Inventory: Using Private Sector Practices Can Reduce Costs and Eliminate Problems (GAO/NSIAD-93-110, June 4, 1993). These reports identified DOD logistics practices that could be improved by applying proven practices of the private sector.

Objectives, Scope, and Methodology

The value of DOD's secondary inventories, which include general supplies and spare parts for weapon systems, increased $60 billion between 1980 and 1988. The magnitude and associated cost of operating this logistics system has caused concern in Congress. The Chairman, Subcommittee on Oversight of Government Management, Senate Committee on Governmental Affairs, asked that we examine DOD's logistics practices involving construction, general, and industrial supplies and identify commercial practices that DOD could adopt to improve its operations and reduce the costs of these supplies. We limited our review to consumable maintenance and repair items that DLA manages.

We reviewed detailed documents and interviewed officials about DOD's inventory management policies and practices, overall inventory statistics, and the legal and regulatory issues that DOD believes inhibit the use of commercial practices at the following organizations:

- Office of the Assistant Secretary of Defense, Production and Logistics, Washington, D.C.;
- Headquarters, Defense Logistics Agency, Alexandria, Virginia;
- Defense Construction Supply Center, Columbus, Ohio;
- Defense General Supply Center, Richmond, Virginia;
- Defense Industrial Supply Center, Philadelphia, Pennsylvania; and
- DOD depots at Richmond and Norfolk, Virginia, and Columbus, Ohio.

DOD consolidated inventory and annual usage levels into over 390 inventory classes, which we used to identify maintenance and repair type items similar to what is used in the private sector. Except where noted, our data reflects inventory valued at the fiscal year 1992 standard price.[2] Also, our annual inventory usage projections are based on fiscal year 1992 data. We did not test or otherwise validate DOD's inventory data.

We discussed the logistics policies and operations and reviewed the inventory records of each service at the Air Force Materiel Command,

[2]The standard price of an item is its acquisition cost plus a fee charged by DLA for operating costs.

Dayton, Ohio, and the Army Materiel Command and the Naval Supply Systems Command, Alexandria, Virginia. At the Army Materiel Command, we requested inventory data for the Army's repair facility at Letterkenny, Pennsylvania. To examine repair facilities and obtain information on the specific types of logistics systems used to support them, we visited the following locations:

- San Antonio Air Logistics Center, Kelly Air Force Base, Texas;
- Oklahoma City Air Logistics Center, Tinker Air Force Base, Oklahoma;
- Naval Aviation Depot, Norfolk, Virginia; and
- Norfolk Naval Shipyard, Portsmouth, Virginia.

At these locations, we discussed the inventory practices currently used by the military industrial centers and DOD initiatives to use commercial practices.

To identify innovative inventory management practices being used by the private sector, we visited two corporations identified as leaders in inventory management practices: (1) PPG Industries at Pittsburgh, Pennsylvania, and Lake Charles, Louisiana, and (2) The Timken Company, Canton, Ohio. We also determined the nature and extent of five additional corporations' efforts to implement new inventory management systems. These corporations were

- Champion International Corporation, Stamford, Connecticut;
- Exxon Chemicals, Baytown, Texas;
- Federal Express, Memphis, Tennessee;
- Honda of America Manufacturing, Inc., Marysville, Ohio; and
- Union Carbide Chemicals and Plastic Company, Inc., South Charleston, West Virginia.

We also met with 10 suppliers of maintenance and repair items in Lake Charles, Louisiana, to discuss their initiatives to reduce inventory costs for their customers and the feasibility of adapting these practices to DOD operations. These suppliers, which were both national and regional distributors, were

- Bayou Gasket and Hose Company of Louisiana, Inc.;
- Best Electric Supply Company, Inc.;
- Carter Chambers Supply, Inc.;
- Drago Supply Company;
- EPSCO, Inc.;

- Industrial Bolt and Gasket, Inc.;
- McJunkin Corporation;
- Motion Industries, Inc.;
- Vallen Safety Supply Company; and
- VWR Scientific.

We conducted our review from February 1992 to January 1993 in accordance with generally accepted government auditing standards.

DOD Holds Multiple Layers of Inventory

DOD maintains a complex logistics system through which it manages several layers of inventory items. At the wholesale level, DLA buys large quantities of consumable items that it holds until needed by the military services. At the military service level, the Army, the Navy, and the Air Force also store consumable items to maintain and repair their land vehicles, ships, airplanes, and other equipment. Mechanics and others who do maintenance and repairs also keep supplies at hand. As a result, DOD has inventory that will last for several years. Some of this inventory is more than 20 years old, and much of it exceeds DOD's needs. DLA's contract administration, technical support, material handling and packing, and inventory maintenance add to the cost of managing DOD's inventories.

DOD Retains Excess and Outdated Inventories

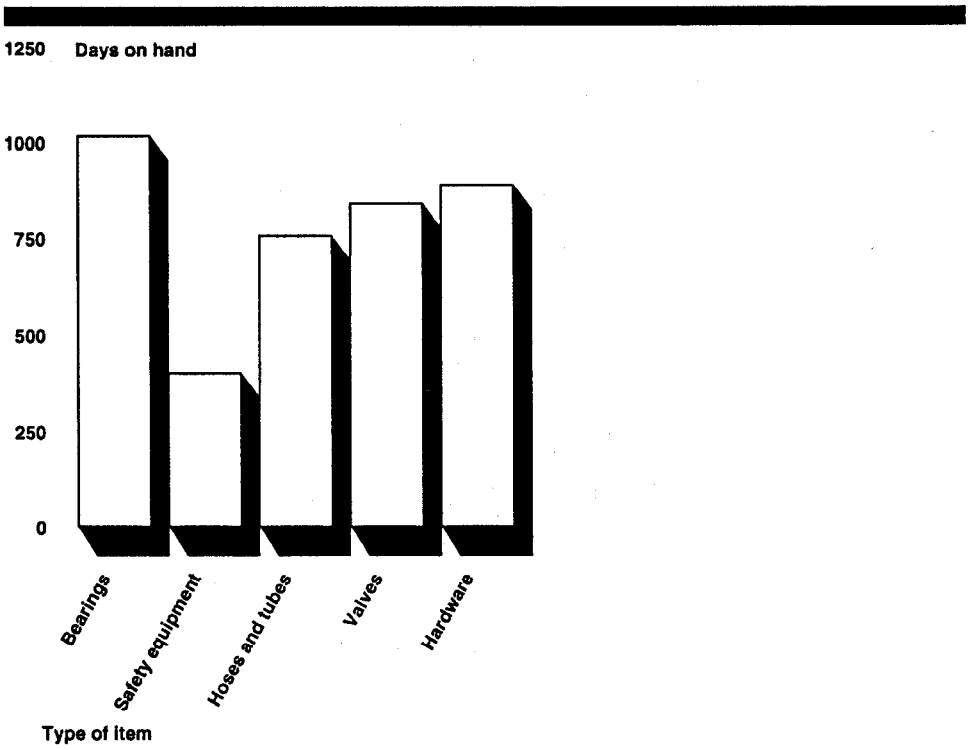
In some cases, DLA and the services have enough maintenance and repair items to satisfy an individual industrial center's needs for several years. The DOD logistics system includes both wholesale and retail inventories to ensure that supplies will be available to meet requirements. However, some supplies can become excess to DOD needs. For example, for 27 items that we examined, DLA had identified $11 million[1] in excess inventory.

DLA Holds Supplies for Years

DLA stores more than $2 billion of inventory for the five groups of maintenance and repair items we examined. This inventory should enable DLA to meet the services' needs for an average of 401 to 1,015 days, assuming the projected demand for these items remains the same (see fig. 2.1). DLA reported that the services bought about $894 million of these items during fiscal year 1992.

[1]Inventory values for these 27 items are based on the latest acquisition cost of each item. See appendix I for details.

Figure 2.1: DLA's Inventories of Maintenance and Repair Items (Fiscal Year 1992)



DLA holds inventory at these levels to meet the services' needs and to ensure that items are available until ordered supplies are received from the vendor. If the demand for an item decreases after DLA purchases and stores these supplies, DLA must dispose of the inventory or store it for long periods of time. In some cases, items have been held indefinitely because they do not have a specified shelf life or because depot officials have not been directed to dispose of them.

To illustrate the length of time DLA stores some of its inventory, we analyzed the records of 45,000 storage locations at DLA's Columbus, Ohio, depot and found that approximately 34 percent of the inventory was between 3 and 10 years old, and about 3 percent was more than 10 years old. In some cases, different locations contained the same inventory item with packing dates from the 1960s, the 1970s, and the 1980s.

Further, we examined DLA's records on 27 items that had high inventory levels and found that the average number of days it would take for DOD to use this inventory (called days on hand) was 7,579 days, or approximately

21 years. DLA has categorized about $11 million (54 percent) of these items as excess inventory. In addition, DLA disposed of over $1 million of these items since 1990. According to DLA officials, the military services had reduced their demand for many of these items during the procurement process, which in some cases took 3 years. Four of these items illustrate the process and the problems.

First, DLA currently has 19,075 annular ball bearings, valued at $858,375, in storage and expects to issue 672 of these ball bearings in fiscal year 1993. At that rate, DLA's inventory of this item will last approximately 28 years. Therefore, DLA has classified 10,573 annular ball bearings, valued at $475,785, as excess inventory. It last bought the ball bearings, which are used in the maintenance and repair of aircraft such as the C-5, the A-10, and the C-130, from a vendor in October 1989. In addition, we found ball bearings that had been packed in 1987 and whose warranty had expired in September 1988 (see fig. 2.2).

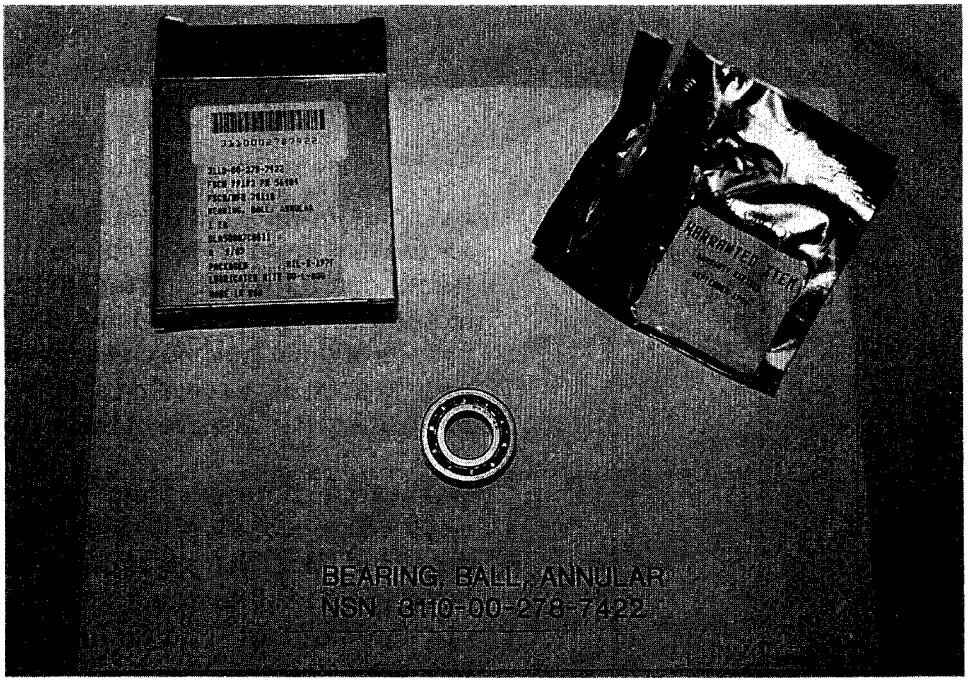
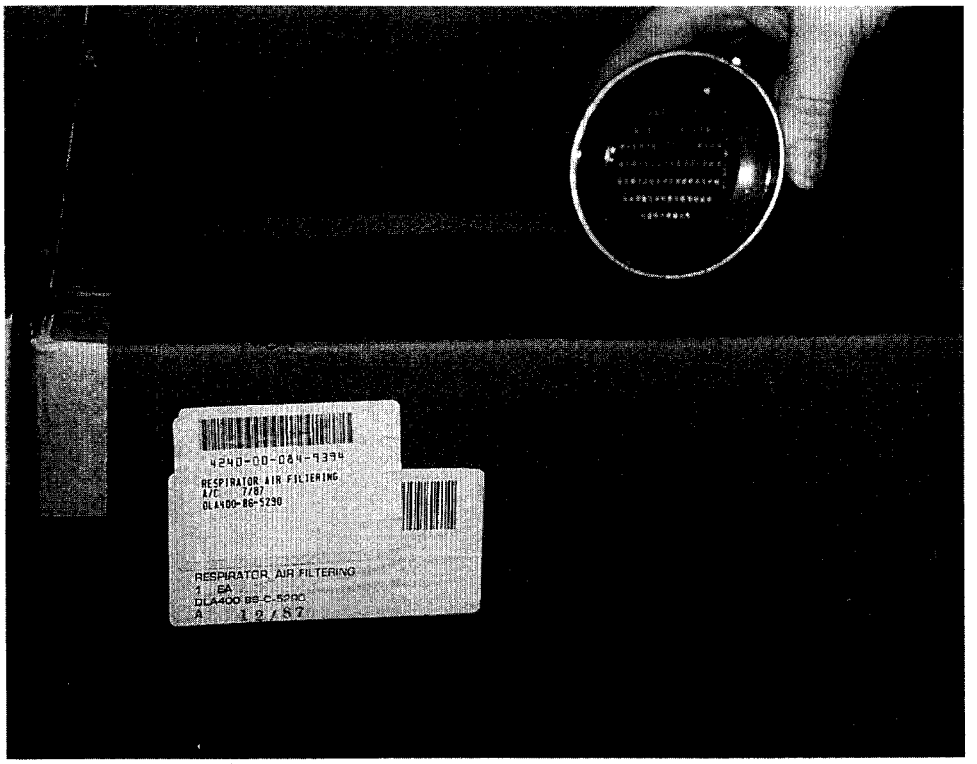


Figure 2.2: Annular Ball Bearing Packed in 1987

Second, DLA has stored 14,428 air filtering respirator kits valued at about $1.5 million. According to DLA officials, the cost of this kit, which is used to

filter out dust, mist, and asbestos, increased from $10.98 to $79.32 in 1986. Because DLA also stocks a less expensive respirator that does not filter out asbestos, the services limit their demand for the more expensive kits for only when asbestos filtering is required. Therefore, DLA expects to issue only 632 of the more expensive kits in 1993. At that rate, the kits will last approximately 23 years. Figure 2.3 shows a respirator stored at DLA's depot in Richmond, Virginia, that was packed in July 1987.

Figure 2.3: Air Filtering Respirator Packed in 1987



Third, in July 1992, as a result of a significant decrease in demand from 5,000 feet per year in 1985 to 300 feet per year in fiscal year 1992, DLA disposed of 181,675 feet of metal tubing, valued at $663,115.[2] DLA last purchased this tubing, which is used to repair and maintain radio and generator sets and 1-1/4 ton utility trucks, in 1975. DLA still holds 7,085 feet of this item, valued at $24,939, which should meet DLA's requirements for the next 44 years.

[2]In fiscal year 1991, DOD estimated the salvage value of excess items such as this tubing at 2.2 percent of their acquisition cost.

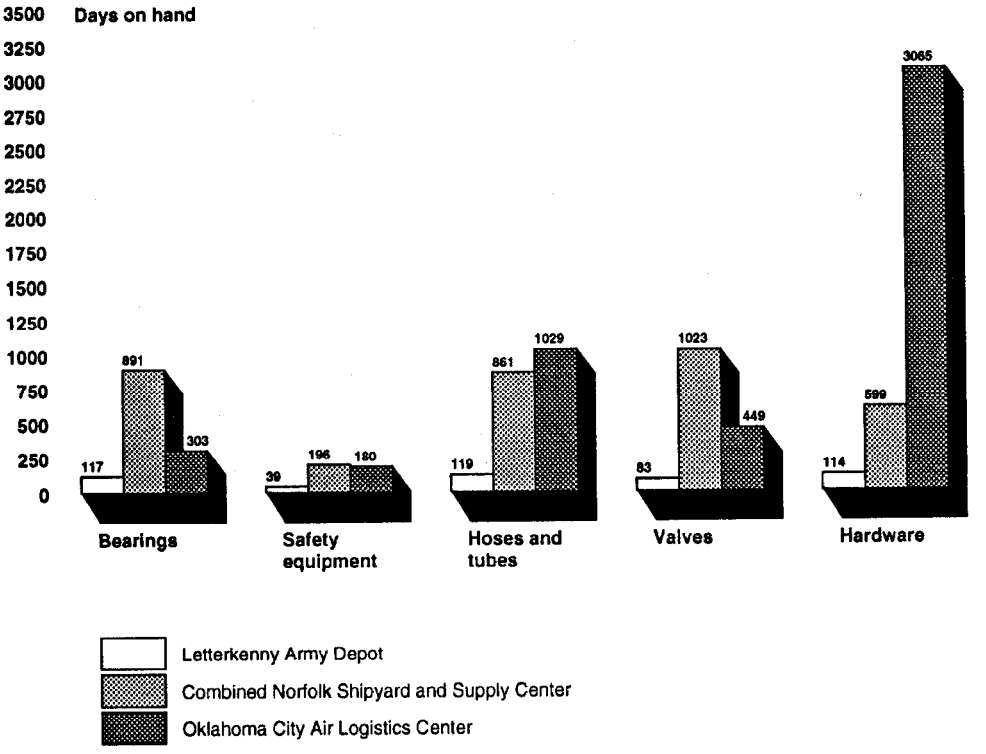
Finally, DLA has classified 1,847 of its 2,552 boxes of machine bolts as excess inventory. The total value of the bolts is $346,817, and the value of the excess bolts is $251,007. In 1989, the military services were using 2,343 boxes of bolts a year to maintain and repair the J-79 aircraft engine installed on the F-4 aircraft, and DLA thus stocked enough bolts to meet this demand. As recently as March 1991, DLA had purchased 1,730 boxes of these bolts. In fiscal year 1992, however, DLA issued only 91 boxes of these bolts and expects to issue only about 80 boxes in fiscal year 1993.

Military Services Store Large Inventories of Maintenance and Repair Items

Like DLA, the military services' industrial centers purchase and store maintenance and repair items that in some cases may last several years. As a result, old items—some that date to the 1960s—were still available for use during our review.

We analyzed the retail inventory data on the five groups of maintenance and repair items stored at one industrial center operated by each of the services. On the basis of fiscal year 1992 usage rates, we calculated the number of days each center would take to use the items in the five groups (see fig. 2.4).

Figure 2.4: Inventory Levels at Three Military Industrial Centers

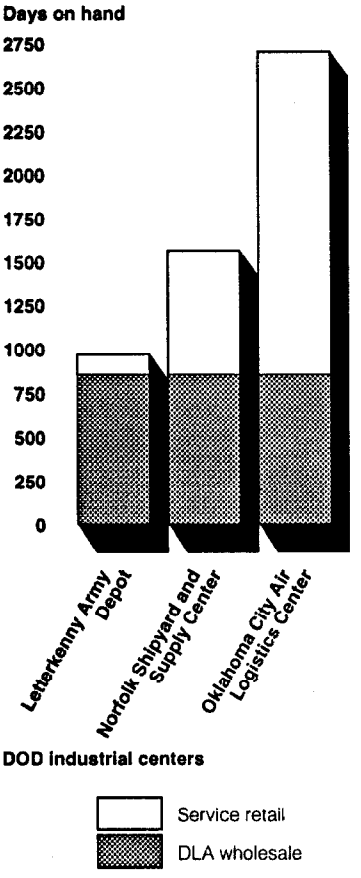


As shown in figure 2.4, Letterkenny Army Depot stores items that will last from 39 to 119 days; the Norfolk Naval Shipyard and Supply Center stores items that will last from 196 to 1,023 days; and the Oklahoma City Air Logistics Center stores items that will last from 180 to 3,065 days.

Air Force officials attributed the large hardware inventory at Oklahoma City to the purchase of items to support the B-1B aircraft. According to these officials, this inventory—which was initially stored by the contractor—was transferred to Oklahoma City for storage, and the Air Force has now approved these items for disposal.

For the same industrial centers, we combined the number of days each center would take to use the DLA wholesale and service retail inventories available to them (see fig. 2.5).

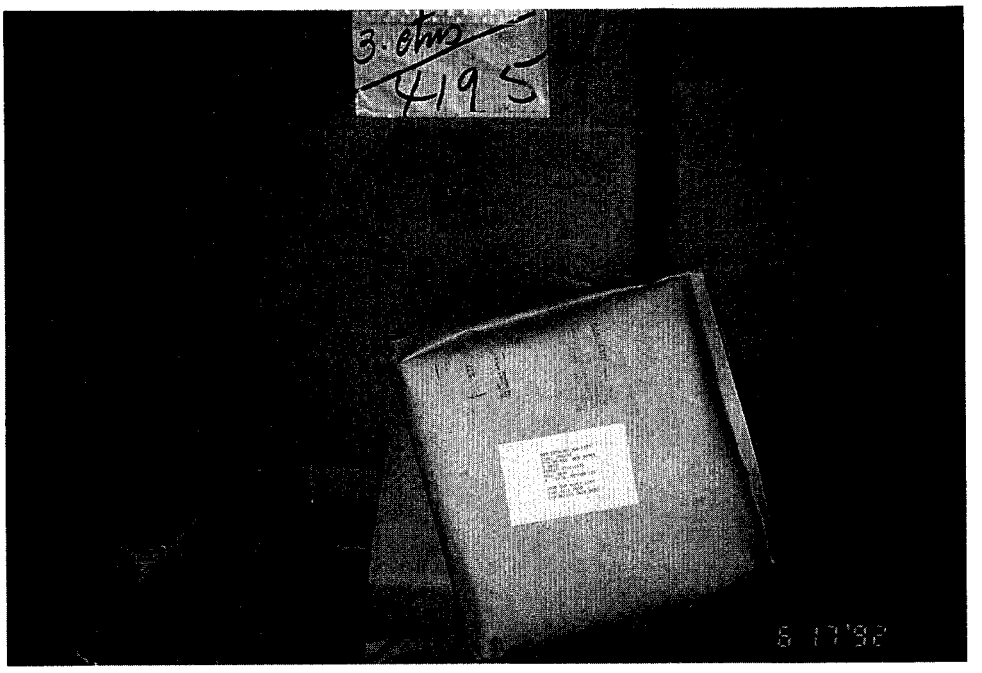
Figure 2.5: Combined Wholesale and Retail Inventory Available to Three Industrial Centers



As figure 2.5 shows, the combined inventory could last as long as 7-1/2 years (2,696 days) at the Oklahoma City Air Logistics Center.

DOD logistics practices result in the storage not only of excess inventory but also of inventory that is used by mechanics or others at repair centers. For example, the Norfolk Naval Shipyard had stored machine bolts dated as far back as 1968. Other items stored at Norfolk and the Oklahoma City Air Logistics Center—such as compressor liners and cylinder bearings—ranged from 5 to more than 20 years old. As shown in figure 2.6, the Air Force has stored in a mechanic's bin at its San Antonio, Texas, Air Logistics Center, a grease seal that had been packed in 1978, over 14 years ago. This seal had not been used as of June 1992.

Figure 2.6: Grease Seal Dated 1978

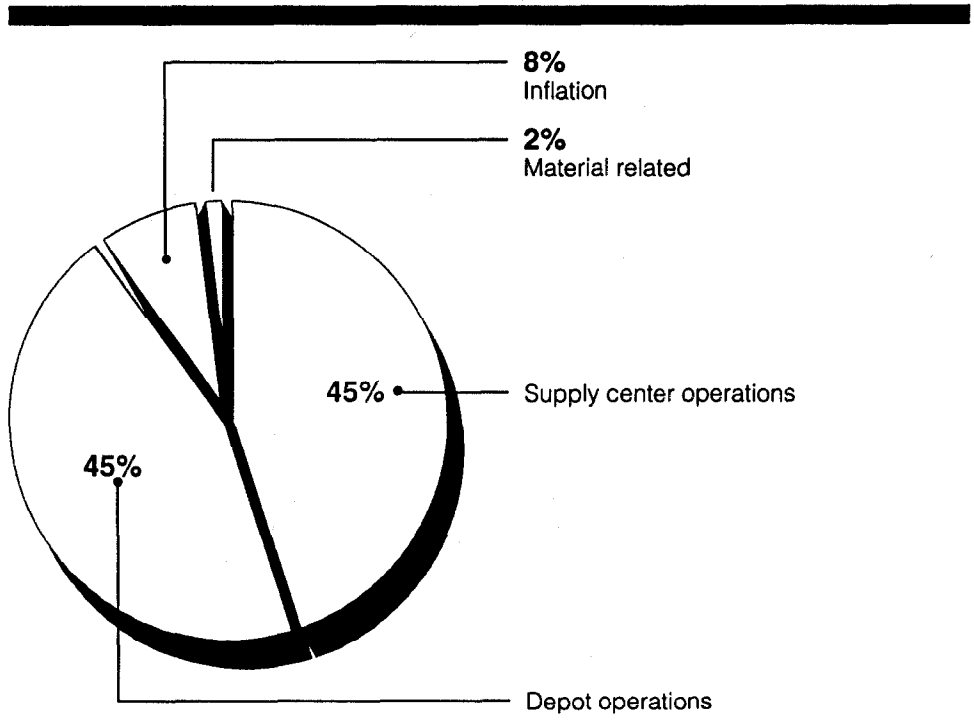


DLA Adds Surcharges to Items Sold

DLA charges military services the cost of an item plus a surcharge, which covers supply center and depot operating expenses, inflation, and material-related expenses. Some of these expenses are related to purchasing items in large quantities to obtain discounts for volume buying. In fiscal year 1992, DLA's surcharges on construction, general, and industrial supplies totaled almost $715 million. Supply center costs include functions such as contract administration, item management, and technical support. Depot costs include material handling, packing, and inventory maintenance. Inflation and material-related expenses, such as inventory losses, account for only a small portion of the total surcharge.

Each year, DLA revises its surcharges based on its estimate of future operating expenses. Currently, DLA's surcharge for construction, general, and industrial items it stores and delivers to the services varies from 30.4 percent to 41.1 percent, depending on the type of item ordered. The surcharge on hardware items DLA stocks and distributes to the services is 41.1 percent. (See fig. 2.7 for a breakout of the surcharge on hardware items.)

Figure 2.7: Components of the Surcharge on Hardware Items (Fiscal Year 1993)



Agency Comments and Our Evaluation

DOD agreed that it operates a massive distribution system to buy, store, and distribute inventory items to the military services and did not disagree that it holds inventory in multiple storage locations for, in some cases, extended periods of time. However, DOD took exception to the 27 items we examined, stating that they were by no means typical of the 3 million consumable items managed by DLA. In addition, DOD was concerned that the report did not portray a balanced picture of DOD's inventory reduction efforts, citing a $400-million reduction in construction, general, and industrial supplies from 1991 to 1992.

We agree that the 27 items we examined are not representative of the 3 million items DLA manages. We selected these items to identify the cause of excess inventory. Despite DOD's inventory reduction efforts, DOD continues to store large amounts of inventory that in some cases becomes excess to DOD's needs. We agree that DOD has taken steps to reduce its inventories, but we believe that the more aggressive methods (see ch. 3) of private sector companies offer DOD more significant opportunities for inventory reductions.

DOD also believes the observations we made regarding 2,696 days of inventory available to support the Oklahoma City Air Logistics Center were misleading because B-1B inventory worth more than $200 million was shipped from the contractor to the Center in 1989 and was retained by the Air Force until it determined how much of it would be needed to support B-1B maintenance requirements. In February of 1992, the Air Force determined that it no longer needed the B-1B inventory and in April 1992 began disposing of it. The Air Force informed us that as of April 1993, Oklahoma City still held B-1B inventory valued at $48.5 million.

We agree that the B-1B inventory levels at the Oklahoma City Air Logistics Center were high because the contractor had shipped B-1B inventory to the Center. Our calculation of 2,696 days on hand, however, is based on inventory data as of August 1992, approximately 4 months after the Air Force began disposing of these B-1B items, and inventory levels at Oklahoma City decreased by about $90 million.

DOD Could Benefit From Increased Use of Commercial Practices

To remain competitive in times of reduced budgets, private sector companies have developed techniques to reduce inventories of maintenance and repair items and the costs to store them. These new techniques include establishing close relationships with suppliers; direct delivery programs; and electronic communications for ordering, invoicing, and bill-paying. Although DOD, which faces similar budget pressures, has used some of these commercial practices to improve its logistics operations, its programs are limited in size and scope.

Developing New Inventory Management Practices

A key step in developing new inventory management practices is to establish mutually beneficial agreements and close relationships between suppliers and users. The users entrust the suppliers with control of the inventory management function by sharing key inventory data, such as a history of the demand for items and usage patterns. The companies then reduce or eliminate their inventories and related storage costs and at the same time benefit from the suppliers' technical expertise and inventory management experience. The vendors in turn prosper from an increase in volume and stability of business, which enable them to maintain competitive prices with the users.

Once these partnerships have been established, the users and suppliers develop electronic data interchange systems and direct delivery programs to streamline the ordering and distribution process. Using the electronic systems, the buyers and the vendors can eliminate paperwork and order and deliver items faster than before. Under direct delivery programs, the users do not use a wholesale system and bypass intermediate storage and handling locations by having suppliers deliver inventory items directly to the user's facility.

Private Sector Companies Use Diverse Means to Reduce Costs

Private sector companies are using combinations of new management practices to reduce inventory and storage costs. We contacted seven companies on the forefront of developing new inventory management systems to determine the nature and extent of their efforts. Two of these companies—PPG Industries, Inc., and The Timken Company—have implemented significant changes, and we looked at their practices in more detail. Of the remaining five companies, four were in the early stages of change and one was midway through the process. The value of their inventories of maintenance and repair items ranged from approximately $6 million to almost $125 million.

Each company selected various inventory management practices. For example, Federal Express is considering three options to improve its logistics practices, one of which includes hiring an outside company to perform purchasing, inventory management, and warehousing functions for maintenance and repair items. Other companies have taken the following steps:

- consolidated supplier activities at one location (called a supplier park) near the industrial facility where inventory is used,
- established programs to reduce obsolescent inventories,
- used new computer software to better monitor inventory,
- standardized inventory to minimize the variety of items stocked, and
- used electronic systems to link the users and the vendors.

PPG Industries Reduced Inventory by Using a Supplier Park

At one of its industrial plants, PPG Industries eliminated $4.5 million (80 percent) in maintenance and repair supplies and saved approximately $600,000 in annual operating costs by locating 10 suppliers' activities at a supplier park 600 yards from PPG's facility. PPG worked with a local developer and its suppliers to establish the supplier park. Each vendor sent a letter to PPG stating that it wanted to be a part of the supplier park. These letters assisted the developer in obtaining a loan from the bank to construct the park. The developer then leased space to each vendor. PPG has no financial or management involvement in the supplier park.

Beginning in 1987, PPG established long-term contracts with these suppliers, developed electronic communications systems, and standardized the types of inventory used. These suppliers now consolidate shipments of items such as valves, pipes, bearings, and other hardware and deliver them five times a day from the supplier park to PPG. If necessary, an order can be filled up to 20 minutes before the next scheduled delivery. PPG does not pay for these inventory items until after the supplier delivers them to PPG's facility. As a result, PPG has reduced or eliminated the need to buy, store, and maintain inventory within its facility.

According to PPG officials, the supplier park has eliminated its responsibilities for managing maintenance and repair items without increasing the cost of the items. PPG pays the same price for its supplies under this arrangement as it did before. The supplier must support any price increase with its cost data, and PPG must approve the increase.

Since PPG established its supplier park, representatives from over 20 companies have visited the facility to determine whether they could use similar practices.

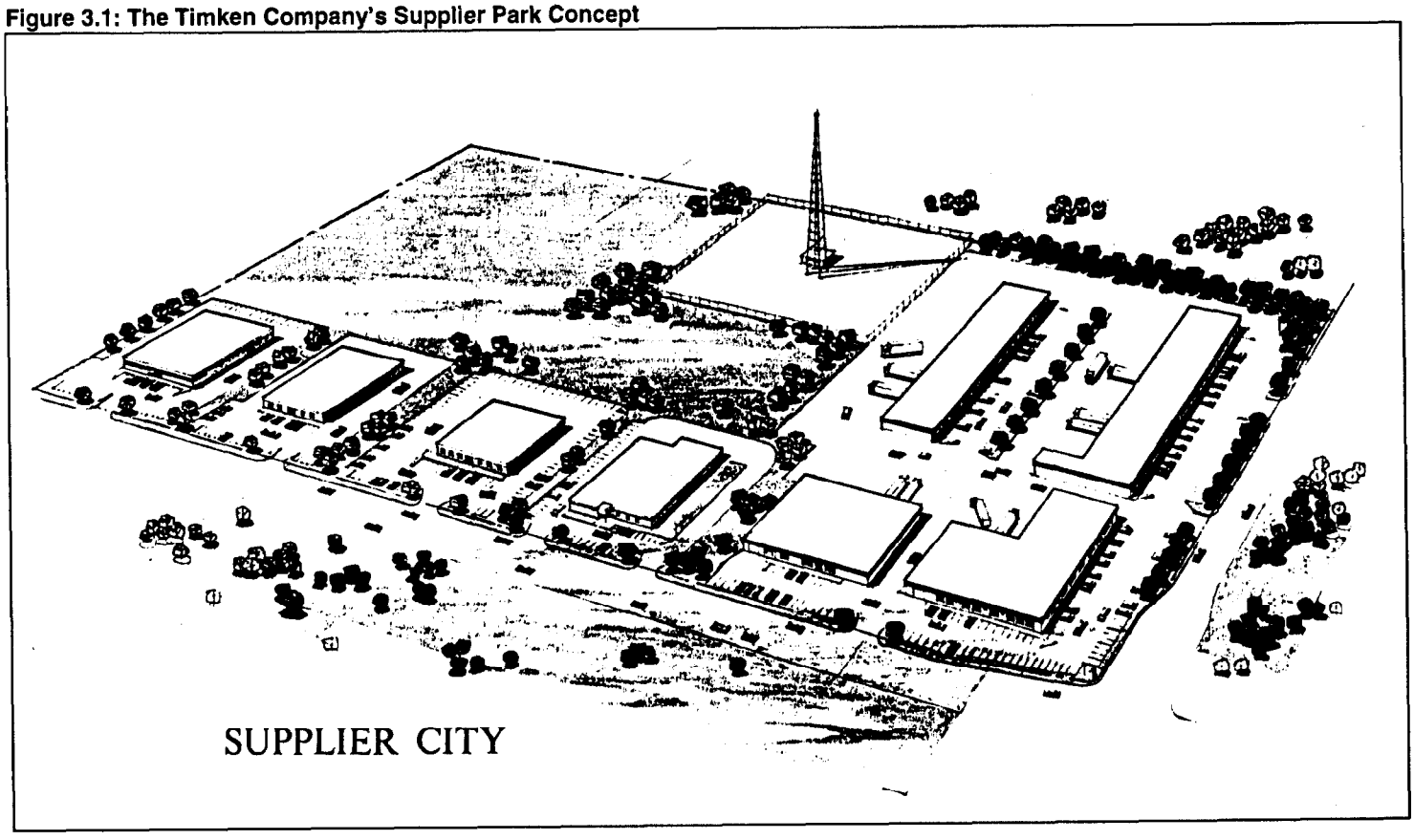
Timken Reduced Inventory Through New Inventory Management Techniques

Since 1986, through customized agreements with suppliers and the use of new inventory management practices (such as direct vendor deliveries), The Timken Company's steel business unit in Canton, Ohio, has reduced maintenance and repair inventories by $4 million (32 percent). In addition, Timken eliminated six inventory storerooms, improved inventory availability, and increased the accuracy of physical inventories.

Timken and its suppliers developed a master purchase agreement that outlines the suppliers' performance standards. Instead of using long-term contracts—like PPG—Timken provides the suppliers its data on past inventory demands and promises the suppliers a portion of that business if they meet the established standards. According to Timken officials, one of the suppliers has also given Timken a key to its storage location in case items are needed during nonbusiness hours.

Timken is also establishing a supplier park (see fig. 3.1). Timken officials stated they believe expanding their current initiatives and establishing a supplier park will assist them in achieving their goal of reducing inventories by an additional 50 percent over the next few years. As of December 1992, one supplier had moved into the park, and three others planned to begin operations by early 1993. Timken allows the suppliers to decide whether or not to relocate to the park based on their abilities to meet the performance standards laid out in the master purchase agreement.

Figure 3.1: The Timken Company's Supplier Park Concept



DOD Has Tested Several New Inventory Management Practices

While DLA and the services have tested new inventory management practices, the initiatives are limited in scope and represent a small portion of DOD's operations. Most of DOD's initiatives to improve logistics operations involve some combination of long-term contracting relationships, direct delivery programs, and electronic data interchange systems.

DOD Agrees That Commercial Practices Need to Be Explored

In May 1990, the Under Secretary of Defense for Acquisition established a 10-point inventory reduction program, which is an essential element of DOD's overall effort to accommodate force and budget reductions and base closures. One of the points was to vigorously pursue alternatives to current DOD material stocking programs, including direct delivery systems.

In August 1990, the Logistics Management Institute[1] —under contract with the Army to study inventory management alternatives—compared DOD's logistics practices with those of the private sector and concluded that "direct shipment . . . can be a powerful tool for reducing DOD inventories . . .." The Institute recommended that the military services and DLA establish direct shipment programs for commercially available wholesale-level items that meet some or all of certain criteria; that is, they are consumable; are subject to frequent, steady, and significant demand; are bulky, large, or heavy; are perishable; and/or are sensitive, fragile, or expensive.

In March 1991, DOD's Inspector General issued a report on current and planned initiatives to use direct deliveries of inventory items previously stocked and issued. The report recommended that DOD improve existing initiatives and overall management support of programs to implement direct deliveries. It stated that DOD should establish policies and guidance for the expanded use of commercial distribution systems. Specifically, the report recommended that the Assistant Secretary of Defense for Production and Logistics increase overall support of direct delivery initiatives through (1) oversight of the initiatives, (2) the distribution of lessons learned from previous efforts, and (3) guidance on calculating the costs and benefits of initiatives. According to an official in the Office of the Secretary of Defense, a January 1993 DOD material management regulation addresses these issues and encourages the services to use commercial practices.

Over the past few years, DOD has identified laws and regulations that require DOD to conduct business differently from the way commercial firms deal with each other. As part of this effort, DLA has outlined statutes and regulations that impose burdens on commercial companies wishing to conduct business with the government. In a June 1992 memorandum to the DLA supply centers, a DLA official observed that under current procurement requirements, many commercial firms are unwilling or unable to apply commercial capabilities to meet government needs. This memorandum states that "scores of government-unique contract obligations—many of them rooted in statute—make it difficult for commercial firms to sell to the government on a commercial basis . . .." As pointed out by the DLA official, these statutes serve a variety of objectives, including supporting social and economic programs, providing equal access to all potential

[1]The Logistics Management Institute is a nonprofit, federally funded research and development center that has done logistics studies for DOD since 1961.

bidders, and ensuring that the government obtains fair and reasonable prices.

These requirements—which according to DLA documentation are based on laws related to areas such as procurement integrity; accounting, auditing, and pricing; and subcontracting to small and disadvantaged businesses—make it more difficult for DOD to adopt commercial practices. Despite the additional burdens these requirements create, however, DOD has begun to incorporate commercial practices in its operations. These efforts demonstrate that DOD can satisfy government procurement requirements as it establishes new business practices.

Commercial Practices Adopted by DLA

DLA's programs to improve inventory management include the establishment of long-term contracts, the grouping of similar inventory items under contracts, the initiation of direct delivery systems, the use of a prime vendor for supplies, and the establishment of electronic ordering systems.

Long-Term Contracting

To stabilize business relationships, DLA agrees to purchase items from a vendor for 1 or more years. Because of these long-term contracts, DLA reduces the time it takes for the procurement process, which could lead to a reduction in inventory requirements. DLA officials believe long-term contracting also offers the following benefits:

- increased production quantities, which may result in lower prices;
- improved customer service due to the close relationship with the supplier; and
- increased opportunity to use existing commercial distribution networks.

DLA officials have emphasized to the supply centers the importance of long-term contracting by assigning a goal of obligating at least 20 percent of their funds under long-term contracts in 1992.

Contract Grouping of Items

In 1990, DLA designed the Commodity-Oriented Procurement System (COPS) to group items with common characteristics. Each DLA supply center responsible for managing industrial-type items established special teams to identify and group items that could be consolidated on orders under long-term contracts. During fiscal year 1992, about 17 percent of DLA's funds for buying construction, general, and industrial items were obligated under COPS. However, according to a DLA official, COPS did not fully meet the goals of increasing standardization and reducing costs, depot stock

levels, and procurement times. As a result, DLA decided to discontinue the program as a separate initiative but to continue to establish groupings of items under its long-term contracting effort.

Direct Delivery Program

Under the Paperless Order Placement System (POPS), which was established in 1982, DLA has established the largest and most successful wholesale-level direct delivery program for industrial-type items. The use of this system allows DOD to reduce its stock levels. Under long-term contracts, DLA uses POPS to electronically order items that are common to both commercial and military users. The vendor agrees to obtain the appropriate electronic equipment to communicate with DLA and to use existing commercial distribution systems. As part of this arrangement, DLA accepts commercial packaging, provided the vendor prints the DOD stock and document numbers on the shipping container. The vendor must directly deliver items to the using facility.

The Use of a Prime Vendor

In 1980, the Defense Construction Supply Center (DCSC) established the Contractor Operated Parts Depot program to reduce the time to order and deliver parts from 70 to 35 days. This is the only DLA supply center that uses this program. The Center contracts with a prime vendor to supply repair parts for administrative vehicles, commercial construction equipment, and material-handling equipment to U.S. military customers worldwide. This contract covers 45,000 national stock numbers plus 4 million part numbers that are not normally stocked by DLA.

The prime vendor, which operates a parts distribution facility on DLA's depot compound in Mechanicsburg, Pennsylvania, electronically receives orders from the Center and delivers the items to a DLA distribution point in the same compound. DLA personnel then pack and ship the items. During fiscal year 1992, items sold under this program represented 1.2 percent, or $12 million, of the Center's total sales.

Procurement Operations Using Electronic Data

In 1987, DLA established the SAMMS[2] Procurement by Electronic Data Exchange (SPEDE) system, which reduces paperwork, lead times, and mailing costs, while increasing order accuracy. Using the system, DLA electronically transmits requisitions and award notifications and receives vendor price quotations. Beginning in 1993, DLA plans to expand this system to make it accessible to more suppliers, which could result in lower prices and may reduce the need to evaluate item pricing.

[2]Standard Automated Materiel Management System.

Other Initiatives

The Defense General Supply Center (DGSC) has awarded three long-term contracts for packaged petroleum products. Under these contracts, the Center buys commercial oil instead of military specification oil. In some cases, these products are delivered directly by the vendor to the user within 15 days.

Also, in response to a recommendation in a previous GAO report,[3] the Defense Personnel Supply Center is establishing a prime vendor program for certain medical supplies. Under this program, the Center contracts with a single distributor of commercial medical supplies to provide needed items to a group of hospitals in a given geographical region. The Center is the centralized contracting and bill-paying organization for DOD hospitals, but storage and distribution are decentralized. A hospital electronically orders supplies from the prime vendor, which is expected to deliver the items directly to the hospital within 24 hours. The Center agrees to pay the vendor within 15 days of delivery and then charges the hospital for the cost of the medical supplies plus a service charge. According to DLA officials, this effort is one of DOD's largest electronic commerce initiatives.

DLA's Use of Commercial Practices Has Been Limited

Although DLA has initiated several programs applying commercial practices to its logistics operations, its efforts have been inconsistently applied. Each supply center might use one program, for example, electronic ordering or direct delivery, but not use others. Table 3.1 shows the extent to which DCSC, DGSC, and the Defense Industrial Supply Center (DISC) apply DLA's programs that include commercial practices.

[3]DOD Medical Inventory: Reductions Can Be Made Through the Use of Commercial Practices (GAO/NSIAD-92-58, Dec. 5, 1991).

Table 3.1: DLA Supply Centers' Application of Programs Using Commercial Practices (Fiscal Year 1992)

Dollars in millions

DLA initiative	DCSC	DGSC	DISC
Long-term contracting[a]			
Contract line items	111,347	2,977	65,439
Percent of total lines	38	1	40
Funds obligated	$183.6	$53.2	$121.5
Percent of total obligations	30	10	36
POPS program			
Contract line items	12,285	89,179	0
Percent of total lines awarded	4	34	0
Sales	$2	$48.8	0
Percent of total	<1	5	0
SPEDE program			
Contract line items	42,604	12,963	51,858
Percent of total	15	5	32
Sales	$40.5	$8.3	$38.9
Percent of total	4	<1	5

[a]Includes COPS program.

As shown in table 3.1, DLA inconsistently uses these initiatives among the three centers. For example, the Defense Industrial Supply Center purchased 40 percent of its items under long-term contracts, or 36 percent of its total dollar obligation, while the Defense General Supply Center purchased slightly less than 1 percent of its items under long-term contracts, or 10 percent of its total obligations.

In addition, although the number of contract line items awarded under a particular program may indicate that a center's program is successful, the dollar value of the items sold under the initiatives remains low. For example, 34 percent of all the Defense General Supply Center's line items were awarded through contracts using POPS during fiscal year 1992. However, the POPS contracts represented only 5 percent of the Center's dollar-value sales.

The Military Services' Use of Commercial Practices Has Been Fragmented

Although the military services have taken steps to incorporate commercial practices in inventory management, they have initiated programs only in individual units, not on a servicewide basis. The key initiatives pursued by the services primarily test the direct delivery concept.

For example, the Army has direct delivery programs at three of its commodity commands: the Communications and Electronics Command, the Tank Automotive Command, and the Aviation and Troop Command. These commands receive direct deliveries of telephone wire, low-volume commercial tires, and specific T-55 engine parts.

The Navy has initiated a just-in-time program in its Jacksonville Supply Center to reduce inventory and related handling and storage costs for fast-moving commercially available items. Under this program, the Navy awards long-term contracts to vendors to provide direct delivery of items from commercial supply sources. Delivery is required within 24 to 72 hours.

Finally, at the Oklahoma City Air Logistics Center, the Air Force established a direct delivery program to provide some regularly demanded chemicals with a specific shelf life. Under the program, private sector companies manage and store these chemicals and provide them to the Center when needed. The Center saves time and space and reduces waste through this program.

Agency Comments and Our Evaluation

In commenting on a draft of this report, DOD stated that for fiscal year 1992, nearly a quarter (24.5 percent) of DLA sales were supplied directly from venders without going through a DOD warehouse. However, most of these direct deliveries were for commodities not covered in this report, such as food. As noted by DOD, direct delivery for construction, general, and industrial supplies is significantly less. For these commodities, we believe there are opportunities for increased use of commercial practices, including direct delivery.

DOD also commented on the lack of comparative analyses of DLA item prices and those obtained by private sector entities. However, as noted in chapter 4, we recommend that DOD quantify the costs and benefits of proposed changes during test programs on the applicability of commercial practices to military industrial centers.

Conclusions and Recommendations

Although DLA and the military services have used some commercial practices in their logistics operations, their initiatives have been limited in scope. Also, while DLA's long-term contracting provides a basis for new alliances with suppliers, DLA has not optimized these relationships through the extensive use of electronic ordering systems, direct delivery programs, and supplier park arrangements. In addition, DLA has demonstrated through its prime vendor program for medical supplies that commercial practices can be adapted to military systems. However, for maintenance and repair-type items, DOD still retains multiple layers of duplicative inventory items. As a result, DOD has some inventory that will last for as long as 20 years and in some cases is held indefinitely.

Through new management practices, private sector companies have reduced their inventories and the costs to manage and store them. The private sector has focused these practices on maintenance and repair items because they are generally standard, used in large quantities, and are stocked by several suppliers. Through the extensive use of similar practices, DOD could minimize buying and storing maintenance and repair items years before they are needed. Shortening the time needed to order items would reduce storage and handling costs and minimize the retention of excess inventory. This would also translate into a reduced need for warehouse space.

Recommendations

We recommend that the Secretary of Defense direct DLA and the military services to develop test programs that will determine the applicability of commercial practices to military industrial centers. We recommend that these efforts include facilities from the Army, the Navy, and the Air Force; encompass all aspects of inventory management; and quantify the costs and benefits of the changes. Among the practices that should be included are

- reducing unnecessary inventory requirements at each center;
- establishing electronic ordering, invoicing, and bill-paying functions between vendors and DOD facilities;
- using supplier parks near DOD maintenance facilities (such as air logistics centers) that use the supplies; and
- eliminating the need to store supplies in the DLA depot system.

We recommend that after these practices have been tested, the military services tailor the changes required at their facilities to apply the successful results of the test programs. Under this flexible approach, DOD

could work around special situations, such as the unavailability of commercial distribution systems and overseas operations, and at the same time improve its logistics system and save money.

Agency Comments and Our Evaluation

DOD agrees with our recommendations and has started to investigate the applicability of a supplier park concept to its operations. DOD stated that DLA will determine if a test of the supplier park is feasible by the second quarter of fiscal year 1994. Also, DLA will work with the military departments to expand, where appropriate, the use of commercial logistics practices in meeting DOD requirements.

Status of Sample Items

Item	National stock number	Inventory value at cost	Days on hand[a]	Excess
Bearing, ball, annular	3110-00-278-7422	$ 858,375	10,219	$ 475,785
Bearing, roller, cylinder	3110-00-426-7936	1,160,806	Indefinite[b]	649,647
Bearing, ball, annular	3110-00-445-2597	998,131	4,544	36,680
Housing, bearing, unit	3130-00-164-4260	606,125	6,203	91,249
Bearing unit, plain	3130-01-101-8486	313,972	23,960	285,602
Respirator, air filter	4240-00-084-9394	1,526,050	8,218	0
Pipe, plastic	4710-00-541-6620	25,403	1,174	0
Tube, metallic	4710-00-640-5415	24,939	15,941	13,858
Hose assembly, nonmetal	4720-00-289-0756	856,576	1,205	0
Hose assembly, air breathing	4720-00-385-2476	435,658	8,655	200,086
Coupling assembly	4730-00-176-4623	717,702	2,416	0
Coupling, clamp, pipe	4730-00-288-9514	25,925	3,220	6,977
Valve, solenoid	4810-00-136-9520	276,390	2,997	52,705
Valve, plug	4810-00-152-1419	271,126	5,100	49,441
Guide, valve, stem	4820-01-066-1249	367,584	3,583	0
Screw, machine	5305-00-291-8680	153,197	88,838	146,586
Bolt, riband, guard	5306-00-395-2094	574,038	423,193	567,480
Bolt, machine	5306-00-950-3306	346,817	11,484	251,007
Stud, plain	5307-00-678-3536	148,864	43,212	122,697
Nut, plain, hexagon	5310-00-582-6494	317,937	350,451	313,605
Nut, self-locking, hexagon	5310-00-729-9443	17,981	Indefinite[b]	16,948
Pin, special	5315-00-223-8915	251,117	459,360	250,969
Pin, grooved, headless	5315-00-684-9540	434	Indefinite[b]	431
Rivet, blind	5320-01-197-1606	263,163	2,301,720	260,224
Seal, plain, encased	5330-00-599-8527	776,820	3,295	0
Hinge, butt[c]	5340-00-231-2667	8,561	11,407	6,940
Padlock	5340-01-217-5068	8,910,680	19,870	7,080,591
Total		**$20,234,371**	**7,579[d]**	**$10,879,508**

[a]Based on DLA's projected demand for fiscal year 1993.

[b]No demand for the item in previous year.

[c]Fiscal year 1992 data.

[d]Calculated average.

Comments From the Department of Defense

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

PRODUCTION AND LOGISTICS

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

April 23, 1993

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

Dear Mr. Conahan:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "COMMERCIAL PRACTICES: DoD Could Save Millions by Reducing Maintenance and Repair Inventories," dated March 11, 1993 (GAO Code 298112), OSD Case 9345. The DoD generally concurs with the findings and recommendations. The Defense Logistics Agency, in its role as Integrated Materiel Manager for the commodities, will take the lead in working with the Military Departments to expand, where appropriate, the use of commercial practices in meeting DoD requirements for those commodities.

The DoD agrees that money can be saved through adoption of commercial practices. In fact, the DoD is concerned that the draft report lacks a full portrayal of DoD actions already underway to meet requirements through commercial practice alternatives to materiel stockage. For FY 1992, nearly a quarter (24.5 percent) of Defense Logistics Agency sales were supplied directly from vendors to requiring activities without going through a DoD warehouse.

See comment 1.

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

Sincerely,

David J. Berteau
Principal Deputy

Enclosure

GAO DRAFT REPORT--DATED MARCH 11, 1993
(GAO CODE 398112) OSD CASE 9345

"COMMERCIAL PRACTICES: DOD COULD SAVE MILLIONS BY REDUCING MAINTENANCE AND REPAIR INVENTORIES"

DEPARTMENT OF DEFENSE COMMENTS

* * * * *

FINDINGS

FINDING A: **The DoD Logistics System.** The GAO reported that the DoD operates a massive logistics system to buy, store, and distribute inventory items to satisfy peacetime and wartime needs. The GAO explained that the DoD manages over four million types of consumable items, of which over 3.2 million are managed at the wholesale level by the Defense Logistics Agency. The GAO reported that the Defense Logistics Agency sells items to the Military Services, which also store consumable items at the retail level in maintenance facilities. The GAO observed that the Services use many of the items to maintain and repair their land vehicles, ships, airplanes, and other equipment on a routine basis. The GAO further observed that the Service maintenance facilities are comparable to private sector industrial plants in that they use the same types of consumable items. (p. 2, pp. 11-14/GAO Draft Report)

Now on pp. 8-10.

DoD RESPONSE: Concur.

- **FINDING B:** **Private Industry's Logistics System.** The GAO reported that, like the Military Services, the private sector has major industrial centers that require maintenance and repair supplies for regularly scheduled maintenance of equipment. The GAO asserted that private sector managers--faced with increasing costs associated with acquiring supplies, spare parts, and raw materials--have developed new inventory management techniques to eliminate the need to buy, store, and distribute large quantities of supplies. The GAO noted that the private sector has tried those new techniques on maintenance and repair items because they are (1) generally standard and are commonly stocked by several suppliers and (2) used in large quantities on a regular basis. (p. 6, pp. 14-15 GAO Draft Report)

Now on p. 10.

DoD RESPONSE: Concur.

ENCLOSURE

- **FINDING C: The DoD Retains Excess and Outdated Inventories.** The GAO reported that, in some cases, the Defense Logistics Agency and the Services have enough maintenance and repair items to satisfy an individual industrial center needs for several years. The GAO explained that the DoD logistics system includes both wholesale and retail inventories to ensure supplies will be available to meet requirements. The GAO pointed out, however, that some supplies can become excess to DoD needs. The GAO cited an example of 27 items it examined that the Defense Logistics Agency had identified as $10 million in potential excess inventory.

  The GAO further reported that the Defense Logistics Agency stores more than $2 billion in five groups of maintenance and repair items examined. The GAO concluded that inventory should enable the Defense Logistics Agency to meet the needs of the Services for an average of 401 to 1,015 days. The GAO observed the Defense Logistics Agency holds those levels of inventory because its policy is to have enough supplies on hand to cover (1) the Service needs; (2) a pre-determined "safety level" to ensure supplies will not run out; and (3) the time between ordering and receiving supplies from the vendor. The GAO noted that, if the demand for an item decreases after the Defense Logistics Agency purchases and stores those quantities, the Agency will have to dispose of the inventory or store it for long periods of time. The GAO further explained that, in some cases, items have been held indefinitely because they do not have a specified shelf life or because depot officials have not been directed to dispose of them. To illustrate the length of time the Defense Logistics Agency stores some of its inventory, the GAO analyzed the records of 45,000 storage locations at the Columbus, Ohio, depot and found that approximately 35 percent of the inventory was between 3 and 10 years old. The GAO pointed out that, in some cases, different locations contained the same inventory item dated in the 1960s, the 1970s, and 1980s.

  When the GAO examined 27 items the Defense Logistics Agency records had identified as having excessive inventory levels, it found that the average number of days it would take for the DoD to use the inventory (called days on hand) was 7,601 days, or approximately 21 years. The GAO noted that the Defense Logistics Agency had categorized over $10 million (54 percent) of those items as excess inventory.

  According to the GAO, Defense Logistics Agency officials advised that over $1 million of the items had been disposed of since 1990, because of the Military Services had reduced their demand

Now on pp. 3 and 14-18.

See comment 2.

See comment 3.

for many of the items during the procurement process, which in some cases took 3 years. (pp. 4-5, pp. 20-26/GAO Draft Report.

DoD RESPONSE: Partially concur. The GAO does not, however, provide a balanced picture of DoD actions to reduce inventories of secondary items. The 27 items cited by GAO are by no means typical, and were identified by the Defense Logistics Agency as potential reutilization/disposal assets. The Defense Logistics Agency manages over 3 million consumable items. In the industrial, general, and construction commodities, wholesale inventory held by the Defense Logistics Agency (excluding inventory gained through the Consumable Item Transfer totalling $1.055 billion) was reduced from $3.639 billion at the end of FY 1991 to $3.234 billion at the end of FY 1992--a reduction of 11 percent.

- **FINDING D**: **The Military Services Store Large Inventories of Maintenance and Repair Items**. The GAO reported that, like the Defense Logistics Agency, the Military Services' industrial centers purchase and store maintenance and repair items, which may last several years. The GAO observed that, as a result, old items--some that date to the 1960s--were still available for use at the time of the GAO review. The GAO analyzed the retail inventory data on five groups of maintenance and repair items stored at one industrial center operated by each of the Services. On the basis of 1992 usage rates, the GAO calculated the number of days each center would take to use the items in the five groups. The GAO found that (1) Letterkenny Army Depot stores items that will last from 39 to about 119 days; (2) the Norfolk Naval Shipyard stores items that will last from 196 to 1,023 days; and (3) the Oklahoma City Air Logistics Center stores items that will last from about 180 to over 3,065 days. The GAO then combined the number of days it would take each of the industrial centers to use the Defense Logistics Agency wholesale and Service retail inventories available to them. The GAO found that the combined inventory could last as long as 7-1/2 years (2,696 days) at the Oklahoma City Air Logistics Center. (pp. 4-5, pp. 26-30/GAO Draft Report)

Now on pp. 3 and 18-21.

DoD RESPONSE: Partially concur. The calculation of 2,696 days for how long the combined inventory could last at the Oklahoma City Air Logistics Center is misleading due to the shipment of B-1B items from contractors to the Center in 1989. Those items were purchased with Air Force provisioning funds for construction of B1-B aircraft at contract sites. The Air Force decided to direct shipments of the items to the Oklahoma City Air Logistics Center, since repair and maintenance would be performed there.

See comment 4.

When the items began to arrive at Oklahoma City in 1989, the Air Force decided to retain items above normal levels of inventory because requirements were unknown at that time and the costs of reprocurement in the event requirements developed were likely to far exceed retention costs. In February 1992, the Air Force determined that retention of these items was no longer necessary. In April 1992, the Air Force began disposition of the items no longer required.

- **FINDING E: The Defense Logistics Agency Adds Surcharges to Items Sold.** GAO explained that the Defense Logistics Agency charges Military Services the cost of an item plus a surcharge, which covers supply center and depot operating expenses, inflation, and material-related expenses. The GAO pointed out that, in fiscal year 1992, the Defense Logistics Agency surcharges on construction, general, and industrial supplies totaled almost $715 million. The GAO further reported that (1) supply center costs include contract administration, technical support, and bill-paying; and (2) depot costs include material handling, packing, and inventory maintenance. The GAO noted that inflation and material-related expenses, such as inventory losses, account for only a small portion of the total surcharge. The GAO observed that the Defense Logistics Agency revises its surcharges, based on its estimate of future operating expenses. According to the GAO, the Defense Logistics Agency surcharge currently varies from 30.4 percent to 41.1 percent, depending on the type of item ordered. (pp. 4-5, pp. 30-31/GAO Draft Report)

Now on pp. 3 and 21-22.

DoD RESPONSE: Partially concur. The Defense Logistics Agency cost recovery rate is one element of an item's standard price. The relevant factor is the price of the item (including the cost recovery rate). Again, it is unfortunate that GAO presents no comparative analysis of Defense Logistics Agency item prices and those obtained by private sector entities.

- **FINDING F: Developing New Inventory Management Practices.** The GAO reported that the first step in developing new inventory management practices is to establish mutually beneficial agreements and close relationships between suppliers and users. The GAO pointed out that the users entrust the suppliers with control of the inventory management function by sharing key inventory data, such as history of the demand for items; cost information; and technical requirements. The GAO observed that once those partnerships have been established, the users and suppliers develop electronic data interchange systems and direct

delivery programs to streamline the ordering of the distribution process.

The GAO reported that private sector companies are using combinations of new management practices to reduce inventory and storage costs. The GAO contacted seven companies on the forefront of developing new inventory management systems to determine the nature and extent of their efforts. The GAO looked closely at two of these companies--PPG Industries, Inc., and the Timken Company--both of which were in the late stages of change and found the following:

-- **PPG Industries, Inc**. The GAO found that, at one of its industrial plants, the Company eliminated $4.5 million (80 percent) in maintenance and repair supplies and saved $600,000 in annual operating costs by locating ten supplier activities at a supplier park 600 yards from the company facility. The GAO reported that, according to PPG Industries officials, the supplier park had eliminated its responsibilities for managing maintenance and repair items, without increasing the cost of the items. The GAO noted the Company pays the same price for its supplies under the arrangement as it did before. In addition, the GAO noted the supplier must support any price increase with its cost data, and the Company must approve the increase.

-- **The Timken Company**. The GAO found that since 1986, through a unique agreement with suppliers and the use of new inventory management practices, the Company steel business unit in Canton, Ohio has reduced maintenance and repair inventories by $4 million (33 percent). In addition, the GAO found the company eliminated six inventory storerooms, improved inventory availability, and increased the accuracy of physical inventories. The GAO explained the company and its suppliers developed a master purchase agreement that outlines the suppliers performance standards. The GAO reported that, instead of using long-term contracts, the company provides the suppliers its data on past and projected inventory demands and promises the suppliers a portion of that business if they meet the established standards. The GAO noted the company is also in the early stages of establishing a supplier park. (p. 6, pp. 32-37/GAO Draft Report)

Now on pp. 4 and 24-27.

DoD RESPONSE: Noted.

- **FINDING G: The DoD Has Tested Several New Inventory Management Practices.** The GAO concluded that, although the DoD established initiatives to adopt commercial practices to reduce inventory and associated costs, too little has been done to date. The GAO explained that most of the DoD initiatives to improve logistics operations involve some combination of long-term contracting relationships, direct delivery programs, and electronic data interchange systems. According to the GAO, while the Defense Logistics Agency and the Services have tested new practices, the initiatives are limited in scope and represent only a small portion of the DoD operations.

  The GAO reported that the Defense Logistics Agency programs to improve inventory management include the establishment of long-term contracts, special contract groupings of inventory items, direct deliveries, the use of a prime vendor for supplies, electronic ordering systems, and other initiatives. (p. 6, pp. 38-45/GAO Draft Report)

Now on pp. 4 and 27-31.

  DoD RESPONSE: Partially concur. The application of commercial practices to expand the use of commercial distribution systems as a method of meeting DoD requirements is more substantial than the GAO implies. Nearly a quarter (24.5 percent) of all Defense Logistics Agency sales during FY 1992 were supplied directly to the requiring activity from a vendor without going through a DoD warehouse.

See comment 1.

- **FINDING H: The Defense Logistics Agency Use of Commercial Practices Has Been Limited.** The GAO reported that, although the Defense Logistics Agency has initiated several programs applying commercial practices to its logistics operations, Agency efforts have been inconsistently applied. The GAO pointed out that each supply center might use one program--for example, electronic ordering or direct delivery--but not use the others. The GAO also pointed out that, although the number of contract line items awarded under a particular program may indicate that a center program is successful, the dollar value of the items sold under the initiatives remains low. (p. 6, pp. 45-47/GAO Draft Report)

Now on pp. 4 and 31-32.

  DoD RESPONSE: Partially concur. The DoD does not agree with the GAO interpretation of the application of stockage alternatives within the Defense Logistics Agency. In FY 1992, for the Agency as a whole, shipment directly from a vendor to the requiring activity, without going through a DoD warehouse, accounted for nearly a quarter of all dollar sales (24.5 percent). In the specific commodities considered by the GAO, shipment directly

from vendors accounted for 13.9 percent of construction sales, 14.5 percent of general sales, and 6.3 percent of industrial sales. As further implementation of the DoD Inventory Reduction Plan proceeded, the Defense Logistics Agency instituted a Buy Reponse Vice Inventory approach in December 1992. This approach will further the adoption of commercial practices within the Agency.

- **FINDING I. The Military Services Use of Commercial Practices Has Been Fragmented.** The GAO reported that, although the Military Services have taken steps to incorporate commercial practices in inventory management, they have initiated programs only in individual units, not on a Service-wide basis. The GAO pointed out that the Services have primarily developed programs to test direct deliveries and have concentrated less on long-term contracting and the use of electronic ordering systems. The GAO discussed the following examples:

  -- **Army.** The GAO found the Army has direct delivery programs at three of its commodity commands--the Communications-Electronics Command, the Tank-Automotive Command, and the Aviation and Troop Command--which receive direct deliveries of telephone wire, low-volume commercial tires, and specific T-55 engine parts.

  -- **Navy.** The GAO found the Navy initiated a just-in-time program in its Jacksonville Supply Center to reduce inventory and related handling and storage costs for fast-moving commercially available items. The GAO reported that, under the program, the Navy awards long-term contracts to vendors to provide direct delivery of items from commercial supply sources, with delivery required within 24 to 72 hours.

  -- **Air Force.** At the Oklahoma City Air Logistics Center, the GAO found the Air Force established a direct delivery program to provide some regularly demanded chemicals with a specific shelf life. The GAO reported that, under the program, private sector companies manage and store the chemicals and provide them to the Center when needed. The GAO noted the Center saves time and space and reduces waste through the program. (p. 6, pp. 47-48/GAO Draft Report)

Now on pp. 6 and 33.

DoD RESPONSE: Concur. The January 1993 DoD Materiel Management Regulation (DoD 4140.1-R) includes guidance on stockage alternatives that applies to all DoD Components and both wholesale and retail levels of inventory.

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RECOMMENDATIONS

- **RECOMMENDATION 1**. The GAO recommended that the Secretary of Defense direct the Defense Logistics Agency and the Military Services to develop test programs that will determine the applicability of diverse commercial practices to Military industrial centers. The GAO further recommended that the efforts should include facilities from the Army, Navy, and the Air Force; encompass all aspects of inventory management; and quantify the cost and benefits of the changes. The GAO recommended that among the practices that should be included are:

  - reducing unnecessary inventory requirements at each center;

  - establishing electronic ordering, invoicing, and bill-paying functions between vendors and DoD facilities;

  - using supplier parks near DoD maintenance facilities (such as air logistics centers) that use the supplies; and

  - eliminating the need to store supplies in the Defense Logistics Agency depot system. (p. 7. pp. 50-51/GAO Draft Report)

  DoD RESPONSE: Concur. The Defense Logistics Agency, in its role as Integrated Materiel Manager for the commodities reviewed by GAO, is already taking action in each area cited by GAO in this recommendation except for the use of supplier parks. The Agency is now investigating the applicability of this private sector approach and will determine whether a test is feasible by the second quarter of FY 1994. As discussed in the DoD response to Finding H, in December 1992 the Defense Logistics Agency adopted a Buy Response Vice Inventory approach in order to consolidate its efforts to expand the use of alternatives to stockage and increase utilization of commercial distribution systems.

- **RECOMMENDATION 2**. The GAO recommended that the Secretary of Defense, after the practices outlined in recommendation 1 have been tested, direct the Military Services to tailor the changes required at each of their facilities to apply the successful results of the test programs. (Under this flexible approach, the

Now on pp. 4-5 and 34.

Now on pp. 5 and 34-35.

GAO believes the DoD could work around special situations, such as the unavailability of commercial distribution systems and overseas operations, and at the same time improve its logistics system and save money). (p. 7, p. 51/GAO Draft Report)

DoD RESPONSE: Concur. As discussed in the DoD response to Recommendation 1, the Defense Logistics Agency, in its role as Integrated Materiel Manager for the commodities reviewed by the GAO, will take the lead in working with the Military Departments to expand, where appropriate, the use of commercial logistics practices in meeting DoD requirements for those commodities. The Defense Logistics Agency is already using the techniques recommended by the GAO, with the exception of supplier parks. The Defense Logistics Agency is now investigating the applicability of supplier parks within the DoD, and will determine whether a test is feasible by the second quarter of FY 1994. Additional actions will be undertaken if a test is determined to be feasible.

The following are our comments on DOD's letter dated April 23, 1993.

GAO Comments

1. DOD states that 24.5 percent of DLA sales were supplied directly from vendors. However, this includes commodities not covered by this report. Food, for example, is delivered directly in larger percentages than consumable items included in our report. As noted by DOD in its comments, direct delivery was used for only 6.3 percent of industrial sales, 13.9 percent of construction sales, and 14.5 percent of general sales. We believe significant opportunities exist for DLA to use new inventory management practices for construction, general, and industrial supplies that are currently stored in various DOD warehouses, and we have focused our report on this issue.

2. We agree that the 27 items are not representative of DLA's overall inventory. We selected these items to illustrate the cause of excess items in DLA's inventory.

3. We agree that DOD has taken steps to reduce inventory levels, but we believe more can be accomplished using commercial practices.

4. We agree that B-1B items have influenced the Oklahoma City Air Logistics Center's inventory statistics. Our calculations of inventory days on hand, however, were made after the Air Force disposed of a large amount of this inventory.

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