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NAVY INVENTORY

Parts Shortages Are Impacting Operations and Maintenance Effectiveness

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Having spare parts available when needed to perform maintenance is critical to the Department of Defense's accomplishment of its missions. Shortages of spare parts are a key indicator of whether the billions of dollars annually spent on these parts are being used in an effective, efficient, and economical manner. In recent years the Navy has testified and reported to the Congress that its aviation systems have significant readiness and supply problems. Since 1990 we have designated the Department of Defense's management of its inventory, including spare parts, as high risk because its inventory management systems and procedures were ineffective.

The National Defense Authorization Act for Fiscal Year 2000[1] requires us to evaluate various aspects of the military services' logistics support capability, including the provision of spare parts. Also, the Chairman, House Committee on Appropriations, and the Chairman, Subcommittee on Defense, House Committee on Appropriations, requested that we review issues related to the quality and availability of spare parts for aircraft, ships, vehicles, and weapon systems. In response to these requests, we reviewed known aviation spare parts shortages within the services. For this report, we focused on the Navy and our objectives were to determine the (1) impact of shortages of spare parts for two selected aircraft[2] and (2) reasons for the shortages. Additionally, we identified the overall initiatives that the Navy and the Defense Logistics Agency have in place or planned to address overall spare part shortage issues. We will be discussing in separate reports our reviews on the availability of spare parts in the Army and the Air Force, the quality of Navy spare parts, funding for spare parts,[3] and Army war reserve requirements for spare parts.[4]

[1] P.L. 106-65, sec. 364.

[2] Includes Marine Corps aircraft.

[3] *Defense Inventory: Information on the Use of Spare Parts Funding Is Lacking* (GAO-01-472, June 11, 2001).

[4] *Defense Inventory: Army War Reserve Spare Parts Requirements Are Uncertain* (GAO-01-425, May 10, 2001).

To address these objectives, we reviewed readiness indicators for the EA-6B Prowler and F-14 Tomcat aircraft. Also, we determined the reasons for the shortages for 50 parts that affected the capability of these aircraft to perform their missions. We selected these aircraft because they are key to fulfilling Navy missions and were experiencing parts shortages, as reflected by various supply and readiness indicators. The Navy sets goals to have a certain percentage of aircraft capable of performing their missions. It measures the impact of parts shortages on aircraft by determining the percentage of aircraft that cannot meet mission requirements because repair parts are unavailable. The Navy and the Defense Logistics Agency are responsible for managing and providing these parts for Navy aircraft.

Results in Brief

Spare parts shortages for the two systems we reviewed have adversely impacted both the Navy's readiness to perform assigned missions and the economy and efficiency of its maintenance activities and have contributed to problems retaining military personnel. During 1993-2000, the Navy met its mission-capable goals for the EA-6B three times and for the F-14D only once, in fiscal year 2000. Further, we recently testified that because of supply shortages and pressures to meet readiness and operational needs, the Navy is taking working parts from one aircraft and placing them in other aircraft.[5] This practice doubles the workload, since maintenance personnel also have to fix the aircraft that parts are removed from. The rates at which this practice is used for the EA-6B and the F-14 are much higher than the aggregate rate for all Navy aircraft. Lastly, we also recently reported that the majority of factors cited as sources of dissatisfaction and reasons to leave the military were related to work circumstances such as the lack of parts and materials needed to perform daily job requirements.[6]

The primary reasons cited by Navy item managers for spare parts shortages were that more parts were required than the Navy originally anticipated and problems in identifying, qualifying, or contracting with a private company to produce or repair the parts. For example, the average quarterly demand for EA-6B landing gear was only one per quarter

[5] *Military Aircraft: Cannibalizations Adversely Affect Personnel and Maintenance* (GAO-01-693T, May 22, 2001).

[6] *Military Personnel: Perspectives of Surveyed Service Members in Retention Critical Specialties* (GAO/NSIAD-99-197BR, Aug. 16, 1999).

(3 months) but increased to eight for two quarters due to the findings from a new inspection requirement. In another case, shortages of F-14 transmitters developed due to delays in finding a company willing to produce the transmitters and further delays because the company was willing to produce the transmitters only if the Navy ordered a large quantity. Other problems included contractors' delays in delivering parts as needed and delays in repairing parts at military facilities.

The Navy and the Defense Logistics Agency have numerous overall logistics initiatives under way or planned that are designed to improve the logistic system and alleviate shortages of spare parts. The initiatives include best commercial inventory practices and generally address the causes we identified of spare parts shortages. For example, the Navy has a pilot program for one type of aircraft that is expected to improve the supply through more accurate demand forecasting and better planning for repairs. Another initiative is designed to make greater use of performance-based contracts to improve the availability of parts and delivery times. We previously recommended improvements to the management framework for implementing best commercial practice initiatives based on the principles embodied in the Government Performance and Results Act.[7] The Navy responded to these recommendations in an update of the first quarter of fiscal year 2000 that linked the initiatives to the Department of Defense's Logistics Strategic Plan. Further, in response to a Defense Department Reform initiative, the Navy developed a High Yield Logistics Transformation Plan that is also linked to the Department's Logistics Strategic Plan. We have an effort under way to assess the Department's overall plan for improving the logistics system.

Because of our prior recommendations on improving the Navy's management framework for implementing commercial inventory practices, the Department of Defense's efforts to develop an overarching integration plan, and our ongoing review of the Department's strategic plan, we are not making new recommendations at this time. The Department of Defense generally concurred with this report.

Background

In January 2001, we reported on Department of Defense management challenges and noted that the Department has had serious weaknesses in

[7] P.L. 103-62, 1993.

its management of logistics functions and in particular inventory management. We have identified inventory management as a high-risk area since 1990.[8] In 1996 and again in 1998, we reported that despite billions of dollars invested in inventory, the Navy's logistics system often could not provide spare parts when and where needed.[9] For example, in fiscal year 1995 about 12 percent of the aircraft were not mission capable due to supply problems, and mechanics frequently had to remove parts from one aircraft to make repairs on another. (See app. I for examples from our prior reports on management weaknesses related to the Navy.) Table 1 shows that during the last 11 years, the Navy has never achieved its overall goal to have 73 percent of its aircraft capable of performing at least one of its assigned missions. Further, the rate at which the aircraft could not perform their missions due to supply shortages has increased from 11.9 percent in fiscal year 1995 to 12.9 percent in fiscal year 2000.

Table 1: Reported Rates of Mission Capability and Parts Shortages for All Navy Aircraft

In percent		
Fiscal year	Aircraft reported as mission capable	Aircraft reported as not mission capable due to supply problems
1990	69.5	13.5
1991	68.4	13.8
1992	69.1	13.4
1993	71.3	12.7
1994	72.6	11.9
1995	72.0	11.9
1996	70.0	12.5
1997	67.7	12.4
1998	68.0	12.9
1999	68.8	12.1
2000	68.2	12.9

Source: Deputy Chief of Naval Operations for Fleet Readiness and Logistics, Fleet Readiness Division.

[8] *Major Management Challenges and Program Risks: Department of Defense* (GAO-01-244, Jan. 2001).

[9] *Inventory Management: Adopting Best Practices Could Enhance Navy Efforts to Achieve Efficiencies and Savings* (GAO/NSIAD-96-156, July 12, 1996) and *Inventory Management: DOD Can Build on Progress by Using Best Practices for Reparable Parts* (GAO/NSIAD-98-97, Feb. 27, 1998).

Navy officials have testified that the increased pace of operations and the resulting accelerated aging of its systems and infrastructure are outpacing its efforts to improve spare parts supplies and are continuing to affect readiness. As such, the Navy has efforts under way to better define its aviation spare parts requirements. The Navy stated in fiscal year 2000 to the Congress that budget increases for fiscal year 2000 had begun to address some of the Navy's most pressing needs but that it would take time for the positive effects to be reflected throughout the force.

Between fiscal year 1999 and 2000, the Navy increased expenditures for aircraft parts by $631 million.[10] In 1999 the Defense Department announced plans to provide $500 million to the Defense Logistics Agency to purchase spare parts for all the services over fiscal years 2001-2004. The Navy's and the Marine Corps' share of that amount is about $190.7 million, of which about $62.1 million had been obligated by February 2001. Further, the Navy and the other services received additional funds in fiscal year 1999 that, unlike the funds cited above, were included in operation and maintenance accounts, including $116 million to eliminate backlogs of aviation spare parts. In a report issued earlier this year, we indicated that current financial information does not show the extent to which these funds were used for spare parts.[11] The Department plans to annually develop detailed financial management information on spare parts funding usage but had not planned to provide it to the Congress. When we recommended that the Secretary of Defense routinely provide this information to the Congress as an integral part of the Department's annual budget justification, the Department agreed to do so.

The aviation systems that we reviewed are vital to the Navy's achievement of its missions but have had significant parts shortages problems. The EA-6B, shown in figure 1, is an all-weather electronic attack aircraft that operates from aircraft carriers and land bases and is the only Department of Defense aircraft that can electronically jam enemy antiaircraft radar. These aircraft were first delivered in 1971 and have had several major upgrades. These aircraft are heavily deployed for operations and were severely stressed during the 1999 operation in Kosovo. The F-14 Tomcat,

[10] The $631 million includes a Navy Working Capital Fund increase of $504 million for the repair and procurement of parts, some of which can take 12 to 24 months to obtain, and an increase of $127 million in the Navy's procurement account to procure parts to meet increased requirements at operating units.

[11] *Defense Inventory* (GAO-01-472, June 11, 2001).

shown in figure 2, is an all-weather fighter that operates from aircraft carriers and is designed to attack and destroy enemy aircraft, in both day and night, and is also in high demand for deployed operations. The F-14A was first delivered in 1972. The F-14B and F-14D models consisted of new production aircraft and remanufactured F-14A aircraft and were first delivered in 1987 and 1990, respectively. The F-14 has a critical role in providing air superiority and an ability to launch precision-guided munitions.

Figure 1: The EA-6B Aircraft

Source: Defense Visual Information Center.

Figure 2: The F-14 Aircraft

Source: Defense Visual Information Center.

The Navy uses both consumable and reparable spare parts for its weapon systems. Consumable parts, such as nuts, bearings, and fuses, are discarded when they fail because they cannot be repaired cost-effectively. The Defense Logistics Agency manages most consumable parts, and the Defense Supply Center in Richmond, Virginia, is the lead center for managing aviation consumable parts. Reparable parts are expensive items, such as hydraulic pumps, navigational computers, and landing gear, that can be cost-effectively fixed and used again. The Naval Supply Systems Command, through its Naval Inventory Control Point, manages and provides central control over reparable parts.

Parts Shortages Adversely Affect Navy Operations, Maintenance, and Military Personnel

The shortages of spare parts for the two aircraft systems reviewed not only have affected readiness but also have created inefficiencies in maintenance processes and procedures and have adversely affected the retention of military personnel. Specifically, the rates at which the EA-6B and F-14 were not mission capable due to spare parts shortages ranged from 4.3 percent to 16.8 percent. Also, the maintenance practice used to mitigate part shortages masks the true impact of shortages and results in increased work for maintenance personnel, causing morale problems and dissatisfaction with military life.

Parts Shortages Contributed to Two Aircraft Systems' Failure to Achieve Mission-Capable Goals

The Navy EA-6B and F-14 varied in their achievement of mission-capable goals during fiscal years 1993-2000, in part, due to spare parts shortages. The EA-6B met its overall goal of 73 percent only three times during the 8-year period (see table 2). During the same period, the F-14A met its 65-percent goal only twice, in the most recent 2 years; the F-14B met its 65-percent goal in 6 of the 8 years; and the F-14D met its 71-percent goal only once, in fiscal year 2000 (see tables 3-5). Although some models of the F-14 aircraft have improved their mission-capable rates in recent years, the Secretary of the Navy reported that the readiness of deployed forces was being maintained to some degree at the expense of nondeployed forces, which have often deferred ordering spare parts and delayed or reduced the scope of maintenance.[12]

[12] *Annual Report to the President and the Congress (2001), Part VI: Statutory Reports*, Report of the Secretary of the Navy.

Table 2: Reported Mission-Capable Goals and Rates for the EA-6B

In percent			
Fiscal year	Mission-capable goal	Reported mission-capable rate	Difference
1993	73	71.6	(1.4)
1994	73	75.5	2.5
1995	73	78.8	5.8
1996	73	71.4	(1.6)
1997	73	74.0	1.0
1998	73	65.7	(7.3)
1999	73	59.9	(13.1)
2000	73	56.9	(16.1)

Source: Deputy Chief of Naval Operations for Fleet Readiness and Logistics, Fleet Readiness Division.

Table 3: Reported Mission-Capable Goals and Rates for the F-14A

In percent			
Fiscal year	Mission-capable goal	Reported mission-capable rate	Difference
1993	65	58.0	(7.0)
1994	65	60.8	(4.2)
1995	65	64.8	(0.2)
1996	65	64.8	(0.2)
1997	65	58.3	(6.7)
1998	65	58.9	(6.1)
1999	65	66.2	1.2
2000	65	67.8	2.8

Source: Deputy Chief of Naval Operations for Fleet Readiness and Logistics, Fleet Readiness Division.

Table 4: Reported Mission-Capable Goals and Rates for the F-14B

In percent			
Fiscal year	Mission-capable goal	Reported mission-capable rate	Difference
1993	65	65.0	0
1994	65	63.3	(1.7)
1995	65	66.5	1.5
1996	65	69.2	4.2
1997	65	63.3	(1.7)
1998	65	71.0	6.0
1999	65	76.5	11.5
2000	65	75.7	10.7

Source: Deputy Chief of Naval Operations for Fleet Readiness and Logistics, Fleet Readiness Division.

Table 5: Reported Mission-Capable Goals and Rates for the F-14D

In percent			
Fiscal year	Mission-capable goal	Reported mission-capable rate	Difference
1993	71	58.1	(12.9)
1994	71	64.4	(6.6)
1995	71	58.4	(12.6)
1996	71	63.7	(7.3)
1997	71	57.0	(14.0)
1998	71	60.8	(10.2)
1999	71	63.5	(7.5)
2000	71	72.3	1.3

Source: Deputy Chief of Naval Operations for Fleet Readiness and Logistics, Fleet Readiness Division.

The Navy reporting system also identifies whether aircraft are not mission capable due to supply shortages or for maintenance requirements. However, the Navy has not established specific goals related to the categories of not mission capable due to supply or maintenance. As shown in table 6, spare parts shortages have affected the capability of EA-6B and F-14 aircraft to perform their missions. Sometimes unit personnel must wait a long time to receive the parts they have ordered. For example, as of June 2000, the average wait time to fill 229 requisitions for mission-related parts for the F-14 was 185 days; for the EA-6B, the average wait time to fill 20 requisitions for parts was 77 days.

Table 6: Reported Rates at Which EA-6B and F-14 Aircraft Were Not Mission Capable Due to Supply Shortages

In percent				
	Not mission capable due to supply shortage			
Fiscal year	EA-6B	F-14A	F-14B	F-14D
1993	11.5	16.1	13.4	16.8
1994	11.8	11.0	11.3	12.8
1995	9.1	10.7	10.5	13.5
1996	13.7	9.9	8.3	10.0
1997	10.8	9.5	7.0	11.7
1998	12.2	6.8	6.3	12.4
1999	12.3	6.4	4.3	11.1
2000	14.2	7.5	4.5	7.6

Source: Deputy Chief of Naval Operations for Fleet Readiness and Logistics, Fleet Readiness Division.

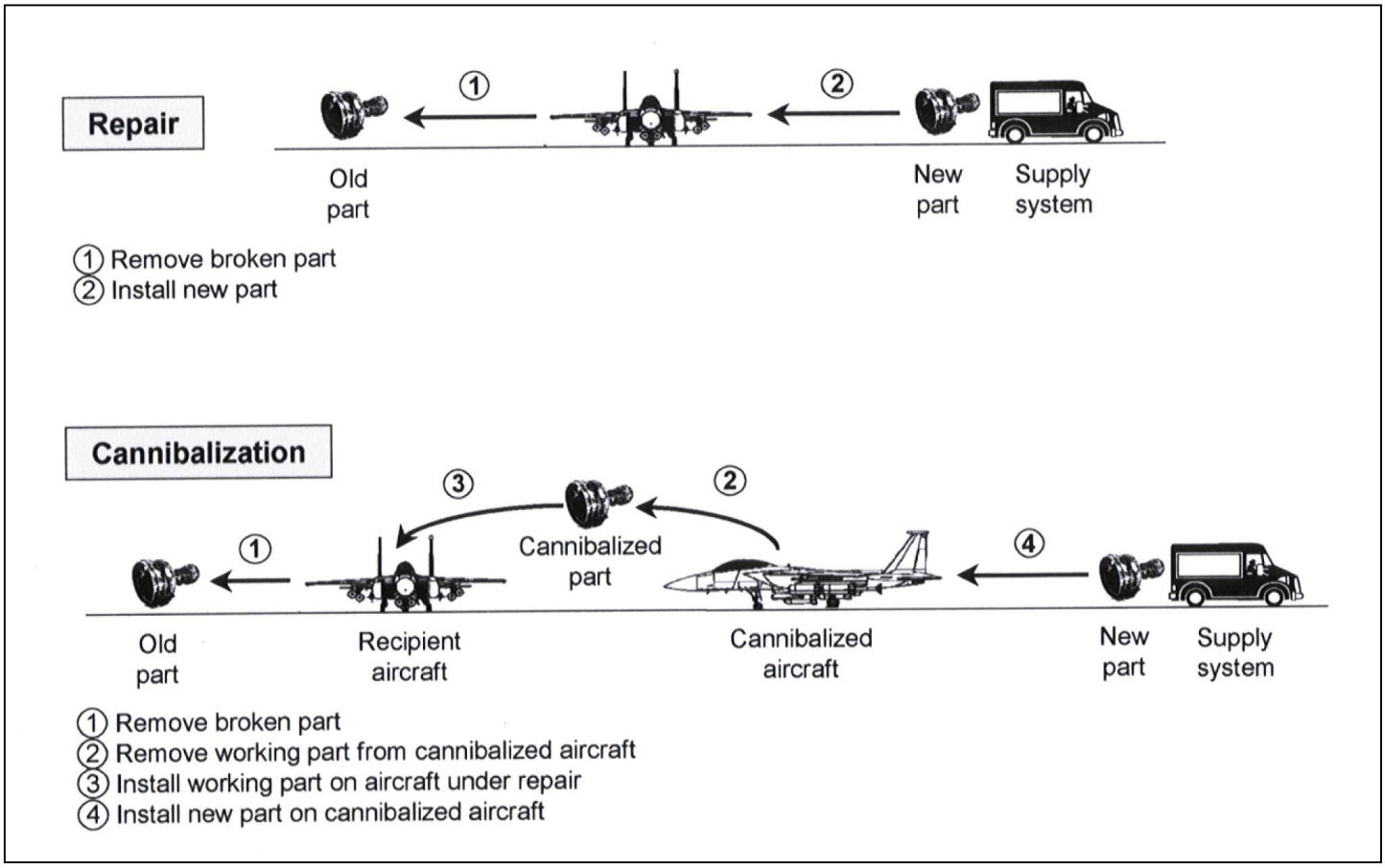
Parts Shortages Cause Inefficient Maintenance and Hamper Retention of Maintenance Personnel

To compensate for a lack of spare parts, maintenance personnel sometimes remove usable parts from one aircraft to replace broken parts on others, a practice called cannibalization (see table 7). According to Navy testimony and reports, the Navy is "cannibalizing" nonmission-capable aircraft to keep other aircraft flying and to maintain readiness. While the mission-capable rates of the aircraft that are kept in the air appear to be higher, the practice masks the impact of the shortages and causes morale problems with maintenance personnel because of the extra work involved, wastes consumable parts, and risks damage to the aircraft and its components. Also, a part removed from one aircraft will not last as long as a part from the supply system and will require maintenance sooner. We recently testified that the shortage of parts is the main reason for cannibalizations and that local commanders are willing to do whatever is necessary to keep readiness ratings high, even if this requires cannibalizing aircraft constantly and having personnel routinely work overtime.[13]

Cannibalization requires at least twice the maintenance time of normal repairs because it involves removing and installing components from two aircraft instead of one (see fig. 3).

[13]*Military Aircraft: Cannibalizations Adversely Affect Personnel and Maintenance* (GAO-01-693T May 22, 2001). We will provide a report on this issue later this year to the Chairman, Subcommittee on National Security, Veterans Affairs, and International Relations, House Committee on Government Reform.

Figure 3: Repairs Require Two Steps, Cannibalizations Four



Source: GAO.

As shown in table 7, the aggregate cannibalization rate (the number of times maintenance personnel used the practice per 100 flying hours) for Navy aircraft did not change significantly during fiscal years 1993-2000. The aggregate rates are misleading, however, because cannibalizations are frequently not reported. In 1998 a Navy study group noted that as much as 50 percent of all cannibalizations were not reported. Nevertheless, the reported cannibalization rates for the EA-6B and F-14 were much higher than the aggregate, and the rate for the EA-6B rose significantly in fiscal year 1999, reportedly because of its extensive use during the Kosovo operation. Aside from the reported rates, Navy personnel's perception is that cannibalization has increased. Of 3,711 personnel surveyed by the Naval Inspector General, 2,932, or 79 percent, reported that cannibalizations had increased and that they did not have enough parts to

maintain mission-capable rates needed to meet training and operational requirements.[14]

Table 7: Reported Cannibalization Rates for All Navy Aircraft and for the EA-6B and F-14 (all models) Aircraft

	Cannibalization rate per 100 flying hours		
Fiscal year	Aggregate Navy aircraft (rate)	EA-6B (rate)	F-14 (all models) (rate)
1993	9.8	15.3	26.7
1994	9.6	14.1	27.0
1995	8.4	11.7	18.7
1996	9.4	15.7	18.9
1997	9.6	13.0	21.3
1998	9.3	16.1	18.7
1999	9.3	18.1	19.1
2000	8.8	16.7	16.2

Source: Deputy Chief of Naval Operations for Fleet Readiness and Logistics, Fleet Readiness Division.

The practice of cannibalizing aircraft burdens maintenance personnel and seriously affects their morale. Cannibalization causes double work, as the maintenance personnel must remove a part from a donor aircraft and install it on another aircraft and later install a replacement part on the donor aircraft. According to maintenance and supply personnel at the units we visited, supply shortages were a significant problem that caused inefficient cannibalizations and expedited repairs. During fiscal year 2000, the Navy reported spending about 441,000 maintenance hours on cannibalizations. The EA-6B and F-14 accounted for about 34,000 and 27,000 of these cannibalization hours, respectively.

The effects of inefficient logistics system practices on morale and retention have been noted in several personnel surveys. According to the Naval Inspector General survey, 74 percent of the 3,711 personnel surveyed said that the conditions they work under negatively affected their decision to stay in the Navy.[15] Similarly, as we testified in March 2000, a Department of Defense 1999 survey of active duty members showed that

[14] *Final Report of Naval Aviation Spares and Readiness*, Naval Inspector General (Apr. 28, 2000).

[15] *Final Report of Naval Aviation Spares and Readiness*, Naval Inspector General (Apr. 28, 2000).

retention problems were concentrated in career fields such as equipment repair.[16] Also, in August 1999, we reported the results of our survey of about 1,000 of the Department's active duty personnel in job occupations that the Department of Defense believed were experiencing retention problems. [17] We reported that the majority of factors (62 percent) associated with dissatisfaction and reasons to leave the military were work circumstances, including the lack of parts and equipment to perform daily job requirements. Both officers and enlisted personnel ranked the availability of needed equipment, parts, and materials among the top 2 of 44 quality-of-life factors that caused their dissatisfaction. Finally, according to a fall 1998 survey of 114 Navy servicemembers and civilian personnel in the aviation, surface, and submarine communities, over 70 percent of the air community rated spares and repair parts as the area most in need of improvement.[18] In our recent testimony, we discussed examples of how cannibalizations may become the source of waste or frustration. In one case, a major component needed for an EA-6B aircraft to perform its mission was removed from or reinstalled on four different aircraft, for a total of 16 times in 6 days.

Multiple Reasons for Parts Shortages

The primary reasons for shortages of the 50 spare parts for the EA-6B and F-14 aircraft that we reviewed were (1) greater demands than anticipated for the parts, (2) delays in awarding contracts for the purchase and repair of parts, (3) contractors' delivery delays, (4) delays in repairs at military facilities, and (5) other problems. An internal Department of Defense study found similar reasons for parts shortages.[19]

Shortages of Parts for Two Selected Systems

The 50 parts we selected for review were recorded as having the largest number of unfilled requisitions that had affected the capability of the EA-6B and F-14 aircraft to perform their missions. (See app. II for a

[16] *Military Personnel: Preliminary Results of DOD's 1999 Survey of Active Duty Members* (GAO/T-NSIAD-00-110, Mar. 8, 2000). The survey of active duty members is projectable to the entire force.

[17] *Military Personnel* (GAO/NSIAD-99-197BR, Aug. 16, 1999).

[18] *Fleet Perceptions of Overall Logistics Support Quality*, Center for Naval Analyses, June 1999.

[19] *Aviation Spare Parts Inventory Funding for Readiness*, Office of the Secretary of Defense, Program Analysis and Evaluation (Feb. 1, 2001).

description of the parts discussed in this report.) Because of the interrelated nature of the supply system, some parts were unavailable for more than one reason. Table 8 is a summary of the reasons for the shortages of the 25 problem parts for each aircraft that we identified primarily through interviews with item management officials and documentation on each part. (See app. III for a more detailed list of the reasons for the parts shortages discussed in this report.)

Table 8: Reasons for Shortages of 50 Parts for the EA-6B and F-14 Aircraft

Reason	EA-6B[a]	F-14[b]	Total
Actual demand exceeded anticipated	11	10	21
Delays in awarding contracts	7	9	16
Contractor problems	6	9	15
Delays in repairing parts at military facilities	4	8	12
Other	5	2	7
Total	**33**	**38**	**71**

Note: Totals add to more than 50 because some parts in our sample were in short supply for more than one reason.

[a] The time period for the shortages was May and June 2000.

[b] The time period for the shortages was July 2000.

Source: GAO analysis of Naval Inventory Control Point-Philadelphia data.

Actual Demand Was Greater Than Anticipated

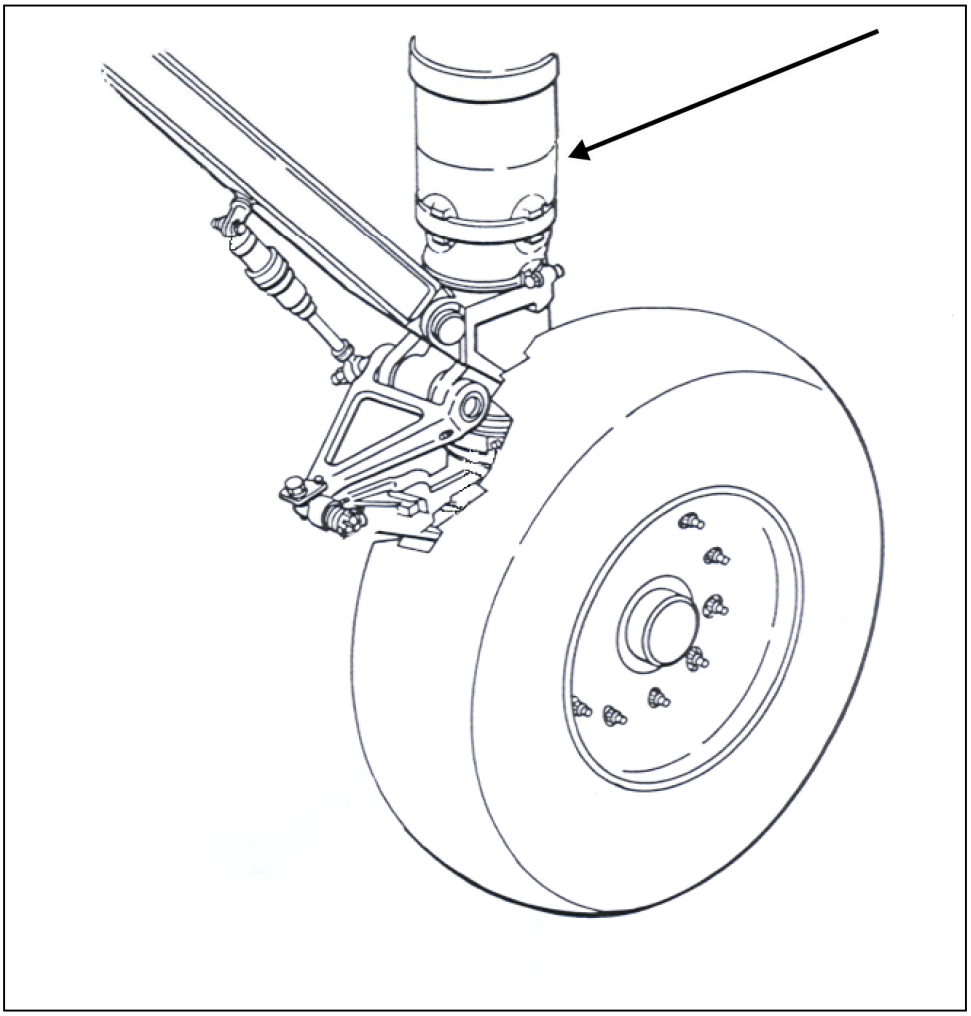
Twenty-one (42 percent) of the 50 sampled parts had greater demands than anticipated that contributed to shortages of the parts. Accurately forecasting the demand for parts is difficult because of the large number of variables that affect demand, including flying hour frequency and environment. The Navy forecasts the demand for parts using an average of historical demands. Although this average is periodically adjusted, it is subject to some degree of error. Forecasting the demand for a new part is often more challenging because the part has not been in the Navy supply system long enough to develop a pattern of demands.[20] Also, according to a Navy supply official, forecasting for parts with infrequent demands is particularly difficult. Examples of parts for which there was unanticipated demand follow:

- Although the average demand for the EA-6B landing gear (see fig. 4) was about one per quarter (3 months), there were eight demands for the gear

[20] When establishing initial spares for new parts, the Navy uses, in part, engineering estimates to determine the quantities of spare parts to purchase.

during the two most recent quarters. The demand exceeded the stock on hand and contributed to a shortage of the part. The main reason for the increased demand was a new requirement for inspection of the gear. The purpose of these inspections was to reduce part failures and improve reliability during operations. The findings of these new inspections resulted in the replacement of more parts. As of June 2000, one unfilled requisition was affecting the capability of an EA-6B to perform its mission.

Figure 4: EA-6B Landing Gear



Note: The arrow points to the landing gear.

Source: Naval Inventory Control Point, Philadelphia, Pennsylvania.

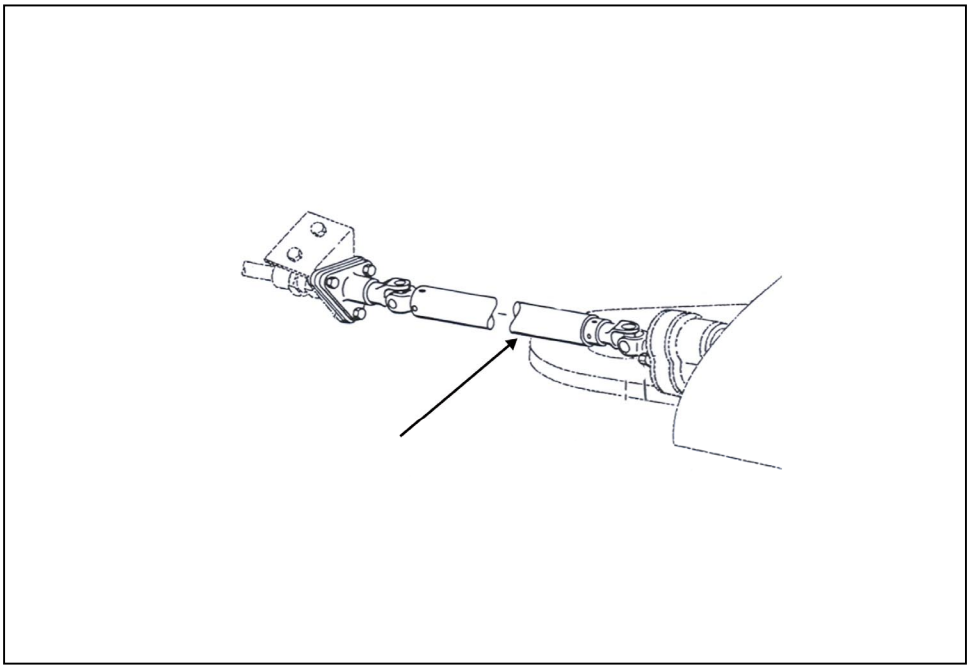
- A new version of an F-14D television sensor (see fig. 5) that was expected to operate 32,000 hours worked much less than anticipated. The increased failure rate and the associated increase in demand were partially attributed to improper installation of the sensor by Navy maintenance personnel. As of July 2000, the Navy was unable to fill 13 requisitions that affected the mission capability of the F-14.

Figure 5: F-14D Television Sensor

Source: Naval Inventory Control Point, Philadelphia, Pennsylvania.

- An unexpected surge in demand for the F-14 telescoping shaft (see fig. 6), which affects wing control during maneuvers, occurred about March 2000 because of a problem in the shaft that was found during a major engineering change to strengthen the wing. The shaft had severe corrosion from normal use and had to be replaced. The Navy repair facility increased its scheduled number of repairs, but as of July 2000, 11 requisitions were unfilled that affected the capability of the F-14.

Figure 6: F-14 Telescoping Shaft



Note: The arrow points to the telescoping shaft.

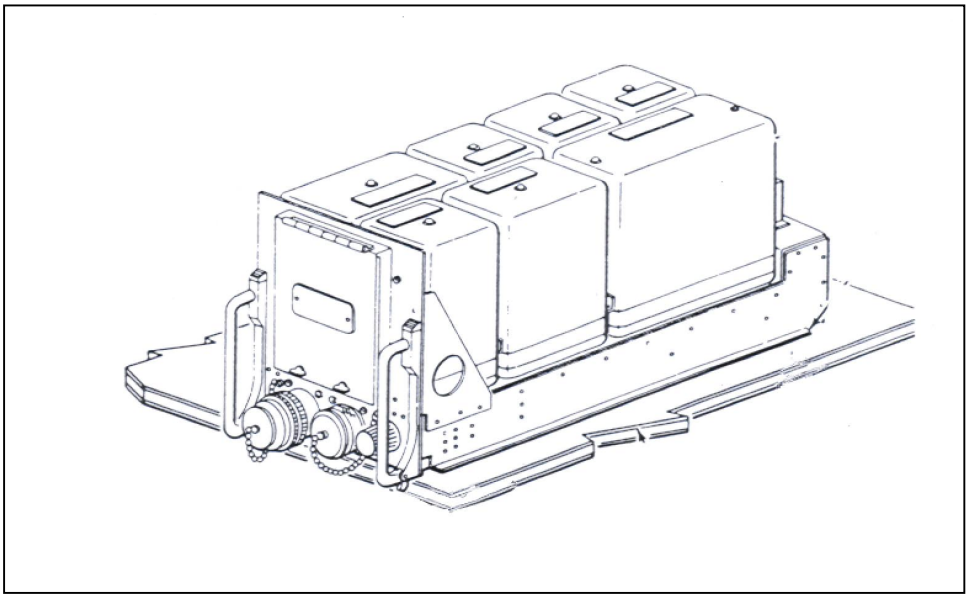
Source: Naval Inventory Control Point, Philadelphia, Pennsylvania.

Delays in Awarding Contracts

Sixteen (32 percent) of the parts we reviewed were in short supply due to delays in awarding contracts to repair or produce them and were affecting the capabilities of the EA-6B and F-14 to perform their missions. For example:

- The Navy had difficulties in locating a company that would produce the aging air navigational computer (see fig. 7) due to obsolescence. The Navy had planned to replace this computer with a newer model as part of an aircraft improvement program that was canceled in late 1994 due to funding constraints. The Navy considered several alternatives and decided that the most economical solution was to contract for a modification of an even older version of the computer to substitute for the current version. The first deliveries of the modified computers are expected in July 2001. As of May 2000, the Navy could not fill two requisitions that affected the capability of EA-6B aircraft to perform their missions.

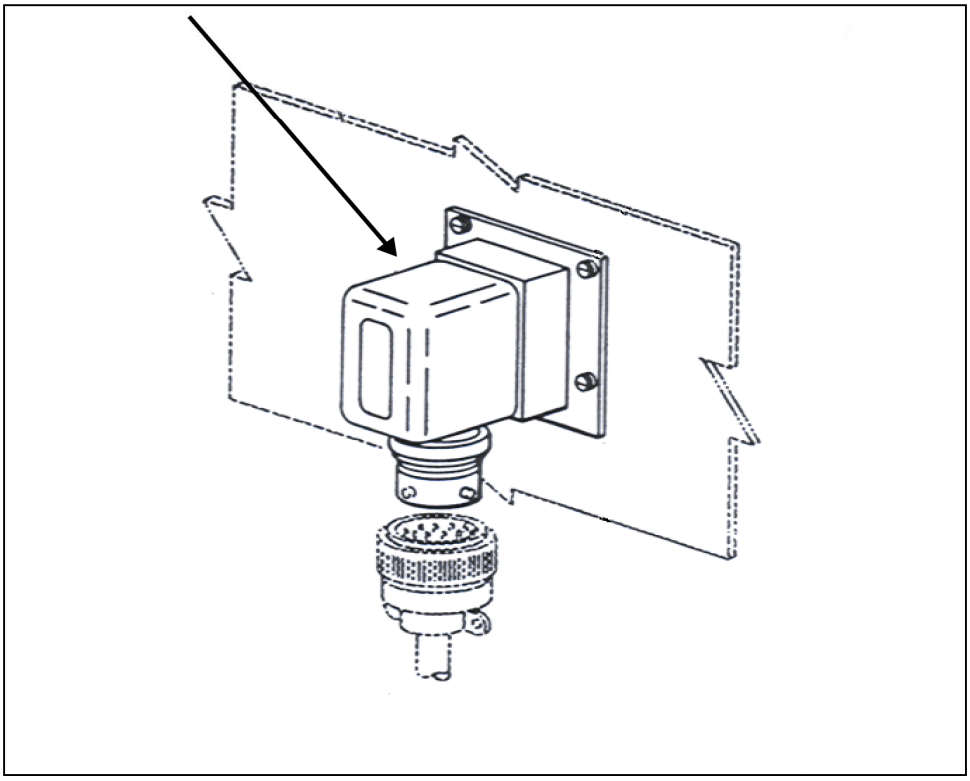
Figure 7: EA-6B Air Navigational Computer



Source: Naval Inventory Control Point, Philadelphia, Pennsylvania.

- Similarly, the Navy had problems finding a company that would manufacture F-14 transmitters (see fig. 8), creating shortages of the part. These transmitters are designed to transfer signals regarding the aircraft's movements and position to the appropriate instruments. The Navy had not procured the transmitter for at least 10 years, and potential contractors were reluctant to manufacture the aging part. The only willing manufacture required a minimum purchase of 100 transmitters. Although the contractor had an expected delivery date of July 1999, its transmitter had problems passing a quality test. As of July 2000, the Navy had five unfilled requisitions that affected the capability of F-14 aircraft to perform their missions.

Figure 8: F-14 Transmitter



Note: The arrow points to the transmitter.

Source: Naval Inventory Control Point, Philadelphia, Pennsylvania.

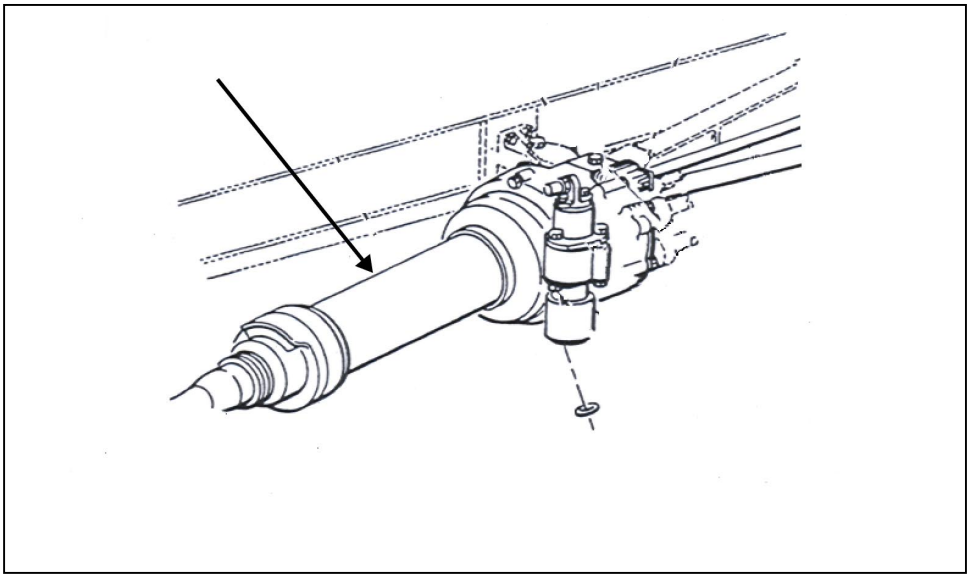
The Navy could not find a company to repair an F-14 filter after the previous contractor ceased repair operations in 1995-96. The Navy had not required repairs for several years because it had enough parts on hand to fill the few requisitions it received each year. The previous contractor eventually agreed to reestablish repair capability. However, as of July 2000, four requisitions had been unfilled that affected the capability of F-14 aircraft to perform their mission.

Problems With Contractors

Contractor delivery delays contributed to shortages of 15 (30 percent) of the parts we reviewed. Delays in contractor repairs and production of new parts were due to problems with parts passing quality tests, equipment failures, and company buy-outs.

- The repairs of two types of EA-6B antennas were delayed because the contractor completely halted repair work from December 1999 to about March 2000 due to a company merger. Later, one of these types of antennas had problems passing final quality tests, which caused a shortage of the antenna. As of June 2000, there was an unfilled requisition for each of the two types of antennas that was affecting the capability of EA-6B aircraft.
- Contractor repairs of an F-14 actuator (see fig. 9), which helps to adjust the aircraft's wings for takeoff and landing, were delayed for several reasons. The contractor's test equipment indicated that repaired actuators were faulty when they had actually been properly repaired. Also, the contractor maintained that repairs were delayed because a subcontractor had not made timely repairs to a subcomponent. However, a Navy supply manager told us that during a visit to the contractor's facility he identified a large number of subcomponents that should have been sent to the subcontractor. This situation contributed to the contractor's delays in repairing the actuators. As of July 2000, there were nine unfilled requisitions critical to the mission capability of the F-14 aircraft.

Figure 9: F-14 Actuator



Note: The arrow points to the actuator.

Source: Naval Inventory Control Point, Philadelphia, Pennsylvania.

One company's buy-out of another company and a later plant move resulted in delayed repairs and deliveries of an F14D wave-guide assembly,

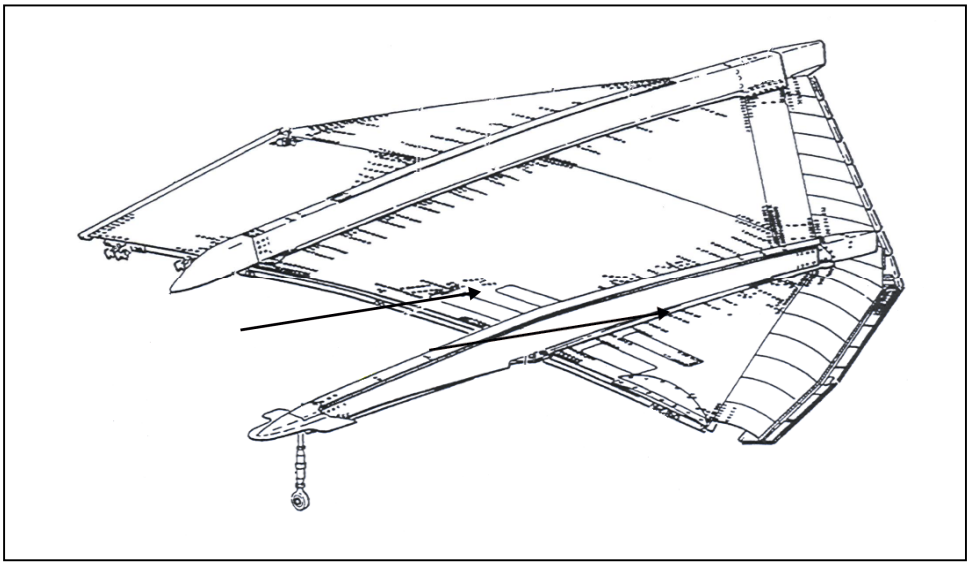
creating a shortage of the part. Although the buy-out and the plant move occurred over 2 years ago, deliveries were still slow and below the expected quantity level. The buy-out also delayed the procurement of more F-14 wave-guide assemblies. As of July 2000, there were eight unfilled requisitions for the assembly affecting the capability of the F-14 aircraft.

Delays in Repairing Parts at Military Facilities

Delays in repairing 12 (24 percent) parts at military facilities caused shortages of the parts. The delays resulted from complications in establishing and sustaining repair capabilities due to maintenance equipment and other problems.

- Problems with the equipment used to test an F-14 axial pump, which provides power to the aircraft's flight control system, led to delays. The repair facility did not resolve these test equipment problems until 5 months later, in October 2000. As of July 2000, 21 unfilled requisitions were affecting the mission capability of F-14 aircraft.
- A military repair facility had problems meeting the repair schedule for an F-14 aircraft wing fairing (see fig. 10) because its manufacture of the parts needed to repair the fairing was delayed. Although the facility was scheduled to repair 10 parts in the third quarter of fiscal year 2000, it repaired only 5. Repair problems continued in the fourth quarter of 2000. The facility was scheduled to repair 13 parts but repaired only 4. As of the end of July 2000, there were nine unfilled requisitions affecting the mission capability of F-14 aircraft.

Figure 10: F-14 Aircraft Wing Fairing



Note: The arrow points to the aircraft wing fairing.

Source: Naval Inventory Control Point, Philadelphia, Pennsylvania.

- A shortage of EA-6B special indicators developed because the designated repair facility did not repair the items as required. After the closure of one Navy repair facility, repair responsibility for the indicators was transferred to a different facility. However, this facility never developed the capability—that is, the parts, equipment, expertise, and staff to repair the indicators. In the third quarter of fiscal year 1999, the facility was scheduled to repair six indicators but repaired none. After discovering the problem, the item manager had the items repaired by a contractor. As of May 2000, there was one unfilled requisition that was reportedly affecting the capability of an EA-6B aircraft in performing its missions.

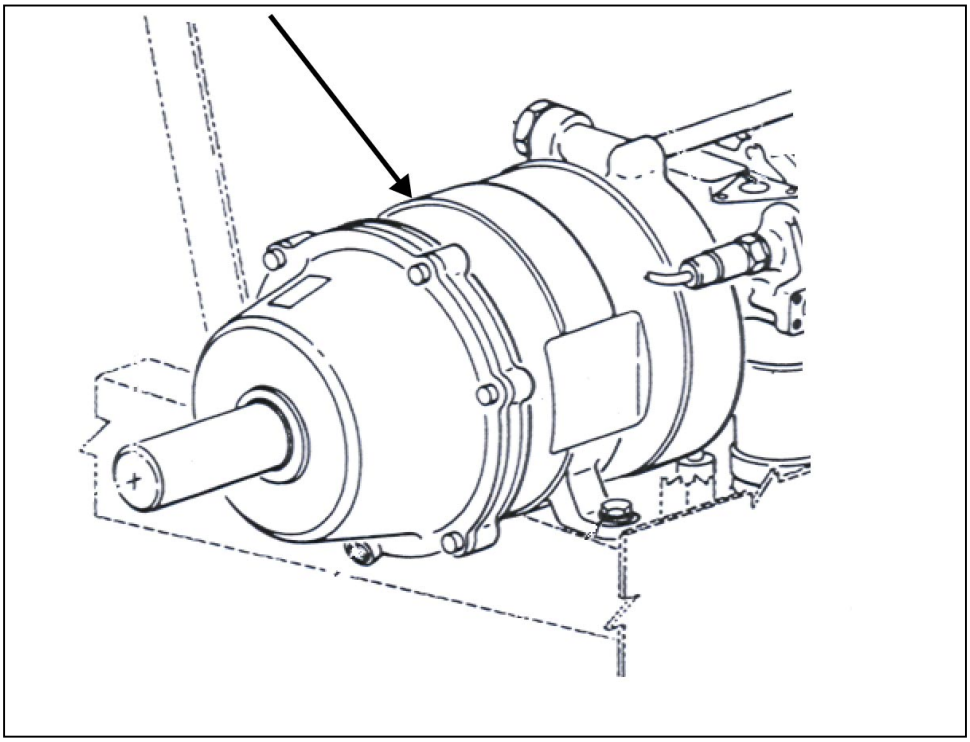
Other Reasons for Shortages

Other reasons for shortages of parts included decisions not to purchase needed parts for economic reasons and nonrecurring problems such as a pricing error. These varied reasons contributed to spare parts shortages for seven (14 percent) of the parts we reviewed. Sometimes, item managers made economical decisions not to purchase additional items because the parts were to be replaced. For example, the item manager purchased minimal quantities of an EA-6B multiport panel because the Navy had decided to redesign the panel as part of an overall engineering

change to the aircraft. A shortage of the panels developed while the redesign was taking place. As of June 2000, two unfilled requisitions for the multiport panel were affecting the capability of the EA-6B aircraft to perform their missions.

Also, an error in the contract pricing structure for repairs of an F-14 power module (see fig. 11) resulted in spare parts shortages. During an evaluation of the requirements for these parts, the item manager identified an error that would have resulted in customers not being charged the full cost of repairs. The award of the contract and the associated repairs were delayed while the contract pricing problem was corrected. As of July 2000, four unfilled requisitions were keeping F-14 aircraft from performing any of their missions.

Figure 11: F-14 Power Module



Note: The arrow points to the power module.

Source: Naval Inventory Control Point, Philadelphia, Pennsylvania.

Department of Defense Internal Study Found Similar Reasons for Shortages

An internal study conducted by the Department of Defense found similar reasons for Navy reparable parts shortages.[21] The study examined parts causing aircraft to be not mission capable and found that there were two reasons for the shortages. The first was an insufficient inventory of certain reparable parts. The second was that although there were enough parts in the system, other constraints prevented the repair facility from repairing the items in a timely manner. The study states this may happen for several reasons. The parts may not have been returned from the units to the repair facility, the repair facility may have lacked capacity in certain key areas such as repair equipment, the consumable parts required to fix the repairable item may not have been available, and item managers may not have requested the repair facility to repair the part because of a lack of funding. The study recommended that the Navy budget include an additional $355 million for fiscal years 2004 through 2007 to help address the inventory shortages. According to a Navy official, the Navy agreed and included an additional $357 million in its budget.

Overall Initiatives Exist to Address Problems

The Navy and the Defense Logistics Agency have initiatives under way or planned that may improve the availability of parts, including the use of best commercial inventory practices. The initiatives are intended to improve the efficiency and effectiveness of the logistics system and generally address the specific reasons for the shortages identified by our review. Under a March 2000 Department of Defense directive, the Navy developed a High Yield Logistics Transformation Plan, which links its logistics initiatives to the objectives in the Department's Logistics Strategic Plan. The directive requires that these plans include a management framework that conforms to Government Performance and Results Act requirements. We have, in the past, made various recommendations to address this issue. [22] We will be reviewing the transformation plan's initiatives, once they are more fully developed, to evaluate their likely effectiveness and to assess whether additional

[21] *Aviation Spare Parts Inventory Funding for Readiness*, Office of the Secretary of Defense, Program Analysis and Evaluation (Feb. 1, 2001).

[22] *Defense Inventory: Improved Management Framework Needed to Guide Navy Best Practices Initiatives* (GAO/NSIAD 00-1, Oct. 21, 1999) and *Defense Logistics: Actions Needed to Enhance Success of Reengineering Initiatives* (GAO/NSIAD-00-89, June 23, 2000).

initiatives are needed. We describe some of the Navy and Defense Logistics Agency initiatives in the sections that follow.

Navy Initiatives

The Navy's High Yield Logistics Transformation Plan and its schedule of best commercial inventory practices identify many initiatives that generally address the reasons for spare parts shortages that we identified, such as contract and repair problems. While some have been implemented, many of these initiatives are now being implemented and it is too soon to tell whether they will effectively reduce aviation spare parts shortages.

Contractor Initiatives

The Navy's performance-based logistics program is designed to improve support to customers and reduce total costs. The program is to use a variety of different long-term, performance-based contracts that will hold contractors accountable for specific performance requirements, including delivery times, at a cost that is at or below current system costs. Although the scope of each contract is somewhat different, the purpose of each is to solve problems with the unavailability, low reliability, and obsolescence of parts. Many of these contracts will provide an incentive to a contractor or require reliability improvements to ensure that the best product is delivered on time. These contracts also may require a contractor to preempt and solve problems due to the obsolescence of parts. The Navy will prioritize systems to be included under this program based on high repair costs, low reliability, and low availability of the systems. The Navy plans to assess the success of this program by measuring the time it takes a contractor to fill a requisition and the percentage of the time a contractor can satisfy a requirement within contractually specified times.

Under another initiative, the Navy manages the parts but uses long-term contracts, with performance periods of up to 5 years, to minimize the time it takes to request and receive parts from contractors. These contracts allow contractors to procure material ahead of time to reduce their production times and reduce the Navy's administrative times. For fiscal year 2000, the Navy reported that these long-term contracts had accounted for over 30 percent of its funds for contracts and had procurement times of only 35 days compared to 89 days for other types of contracts. The Navy plans to monitor this initiative and expects long-term contracts to reduce the Navy's inventory and increase readiness.

Maintenance Initiatives

The Navy has, among others, the following initiatives designed to improve its aviation repair facilities operations, including a reduction in repair times:

- The Navy established business process teams for material management, planning and scheduling, and the repair of system components at aviation repair facilities. The three teams have developed processes designed to improve operations and they are to be implemented at the three Navy repair facilities by June 2006. As part of this effort, Navy depots are working with the Defense Logistics Agency to requisition material for repairs in advance of actual demand, based on a credible forecast. The Navy expects this effort to reduce the repair times and costs, improve readiness, reduce inventories, and annually save $39 million by fiscal year 2005.
- The Navy plans to use an automated system to provide planning, scheduling, capacity, and other information to reduce repair cycle times and improve the rate at which customer delivery dates are met. The Navy's goal is to fully implement the system at its three repair facilities by September 2002.
- The Navy plans to reduce the time it takes to transport inoperable items from units to repair facilities, especially for parts that are in short supply. As of June 2000, implementation of this initiative had been delayed due to problems in implementing a reporting system that accounts for material in transit between the receiving and sending points.

Broad-Based Logistics Initiatives

The Navy has several broad-based initiatives that may reduce spare parts shortages. One of these is the aviation supply chain/material management initiative. The Navy expects this initiative will improve forecasting for the demand of parts and repair planning. Other features of this initiative include better tracking of inoperable items and the potential for automatic induction of parts into the repair cycle. The Navy plans to test the new process on the E-2C aircraft starting in December 2001. If the pilot proves successful, the Navy plans to expand the initiative to all Navy weapon systems. Estimated costs are $80 million per year from fiscal year 2002 until the break-even point during fiscal year 2006. Performance measures and baseline data will be developed after July 2001.

Other planned logistics system process improvements include the following:

- The Aviation Maintenance-Supply Readiness Study Group, chartered in March 1998, is to identify specific actions to improve readiness and develop systemic improvements to increase mission capability rates. The

group is addressing problems such as the cannibalization of aircraft parts, the time that repair facilities take to repair and return parts, and reliability problems.

- The Department of Defense is planning to use the time that customers wait for parts as a key measure for evaluating the overall effectiveness of the logistics system. As such, the Navy intends to track the time it takes from the ordering of a part to its delivery, develop a strategy for improving the timeliness of the process at different shore facilities and deployment sites, and then optimize the Navy's investment in spare parts.
- The Navy plans to track items by serial number so that it can better measure reliability, predict parts requirements, identify maintenance deficiencies, develop solutions, improve readiness, decrease repair time, and manage warranties. This initiative is expected to cost $8.5 million but achieve a return on investment of $30 million per year plus labor savings of about 20,000 hours per year.

Defense Logistics Agency Initiatives

Aviation Investment Strategy

The Defense Logistics Agency's major initiative to reduce aircraft spare parts shortages is its Aviation Investment Strategy. This initiative, which started in fiscal year 2000, focuses on replenishing consumable aviation repair parts identified as having availability problems that affect readiness. To achieve this initiative within the Navy, the Defense Logistics Agency plans to invest about $190.7 million in Navy and Marine Corps aviation spare parts over fiscal years 2000-2003. As of February 2001, $62.1 million had been obligated for this purpose, but only $9.9 million worth of parts had been delivered.

Aging Aircraft Program

The purpose of the Defense Logistics Agency's Aging Aircraft Program is to consistently meet the customers' needs regarding the availability of spare parts for Army, Navy, and Air Force aviation weapon systems. The program's focus will be to (1) provide inventory control point personnel with complete, timely, and accurate information on current and projected parts requirements; (2) reduce customers' wait time for parts for which sources or production capability no longer exist; and (3) create an efficient and effective management structure and processes for achievement of program goals. The Defense Logistics Agency plans to spend about $20 million on this program during fiscal years 2001-2007.

The Department of Defense Is Working to Respond to Our Recommendations for Better Planning

To provide a mechanism to improve the potential for successfully implementing commercial inventory initiatives and measure results, we recommended in October 1999 that the Secretary of Defense direct the Secretary of the Navy to improve the management framework for implementing best practice initiatives based on principles embodied in the Government Performance and Results Act. The Department of Defense concurred and stated that the Navy would provide an update in the first quarter of 2000. The Navy's updated schedule links its commercial inventory practice initiatives to the broad objectives of the Department of Defense's Logistics Strategic Plan.

We also recommended in June 2000 that the Department develop an overarching plan that integrates the individual military service and defense agency logistic reengineering plans to include an investment strategy for funding the initiatives and details on how the Department plans to achieve its final logistics system goals. The Department agreed with the recommendation and stated it plans to integrate the various logistics strategies and service initiatives. Further, as required by the House Committee on Armed Services report on the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001,[23] we are assessing the methodology the Department of Defense used in formulating its August 1999 long-range Logistics Strategic Plan.

Because of our prior recommendations on improving the Navy's management framework for implementing commercial inventory practices, the Department of Defense's efforts to develop an overarching integration plan, and our ongoing review of the Department's strategic plan, we are not making new recommendations at this time.

Agency Comments and Our Evaluation

In written comments on a draft of this report, the Principal Assistant, Deputy Under Secretary of Defense for Logistics and Material Readiness indicated that the Department of Defense generally concurred with the report. The Department's comments are reprinted in their entirety in appendix IV.

[23] House Report 106-616, p. 339.

Scope and Methodology

To determine the impact of shortages of spare parts for two selected aircraft, we reviewed April 1999 through December 2000 Department of Defense Quarterly Readiness Reports to Congress; Navy mission-capable goals and rates and the rates of not mission capable due to supply and maintenance problems for fiscal years 1993-2000; and demand and unfilled requisition data for major aircraft systems for March and June 2000 from the Naval Inventory Control Point-Philadelphia, Operations Directorate. We also discussed supply and maintenance issues with weapon system program managers at the Naval Air Systems Command. We did not independently verify the readiness and other data. We also visited maintenance and supply officials at the Naval Air Station, Oceana, Virginia Beach, Virginia, and the Second Marine Air Wing, Cherry Point, North Carolina.

To determine the reasons for shortages of mission-related spare parts for the EA-6B and the F-14, we reviewed requisition data at the Naval Inventory Control Point-Philadelphia and judgmentally selected 50 parts that affected the capability of the two aircraft to perform their missions. These parts had the largest number of unfilled requisitions at the time of our visit: the end of May and June 2000 for the EA-6B and the end of July 2000 for the F-14. We interviewed the managers responsible for each selected part. To obtain customer views of critical parts problems, we also attended F-14 and EA-6B supply conferences. To help validate the reasons inventory managers provided for the parts shortages, we reviewed inventory management documents such as the March 2000 stratification reports, the 5-year demand history, and other relevant supply management documentation, including repair facility production schedules and completion data for the fourth quarter of fiscal year1998 through the fourth quarter of fiscal year 2000 from the Naval Inventory Control Point-Philadelphia Industrial Support Division.

To identify initiatives that the Navy and the Defense Logistics Agency have under way or planned to address spare parts shortages for all aircraft, we interviewed Navy and Marine Corps headquarters officials and examined relevant documentation. Specifically, we reviewed the Navy's Logistics Transformation Plan for fiscal year 2000 and the Navy and Marine Corps reports on the best commercial inventory practices. We also discussed various initiatives with Naval Supply Systems Command and Naval Inventory Control Point officials. We reviewed our prior reports and relevant Navy and Department of Defense reports and studies, including those published by the Naval Inspector General, the Navy's Aviation Maintenance-Supply Readiness Study Group, and the Office of the Secretary of Defense for Program Analysis and Evaluation.

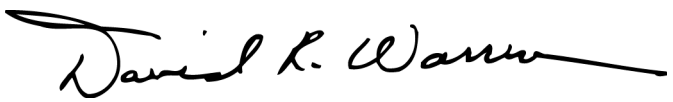
During our audit, we interviewed supply and maintenance officials and obtained information from the following locations:

- Deputy Under Secretary of Defense for Readiness (Personnel and Readiness), Arlington, Virginia.
- Joint Chiefs of Staff, Logistics Directorate, Arlington, Virginia.
- Joint Forces Command, Logistics Directorate, Norfolk, Virginia.
- Deputy Chief of Naval Operations, Fleet Readiness and Logistics, Arlington, Virginia.
- Commander in Chief, U.S. Atlantic Fleet, Logistics Directorate, Norfolk, Virginia.
- Commander, Naval Air Forces Atlantic Fleet, Logistics Directorate, Norfolk, Virginia.
- Naval Supply Systems Command, Mechanicsburg, Pennsylvania.
- Naval Inventory Control Point, Philadelphia, Pennsylvania.
- Naval Air Systems Command, Patuxent River, Maryland.
- Naval Air Station, Oceana, Virginia Beach, Virginia.
- Marine Corps Headquarters, Aviation Supply Logistics, Arlington, Virginia.
- Marine Corps Forces, Atlantic, Norfolk, Virginia.
- Second Marine Air Wing and Squadrons, Cherry Point, North Carolina.
- Defense Logistics Agency Headquarters, Alexandria, Virginia, and Defense Supply Center Richmond, Richmond, Virginia.

We performed our review between February 2000 and June 2001 in accordance with generally accepted government auditing standards.

We are sending copies of this report to the Secretaries of Defense and the Navy; the Commandant of the Marine Corps; the Director, Defense Logistics Agency; and the Director, Office of Management and Budget. We will also make copies available to others upon request.

Please contact me at (202) 512-8412 if you or your staff have any questions regarding this report. Key contributors to this report were Lawson Gist, Jr.; Dan Omahen; Tracy Whitaker; and Nancy Ragsdale.



David R. Warren
Director, Defense Capabilities
and Management

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Appendix I: Management Weaknesses Contribute to Spare Parts Shortages

Our high-risk series of reports over the past several years noted that the Department of Defense inventory and financial management weaknesses have contributed to the unavailability of parts when needed. In January 2001, we reported on Department of Defense management challenges and noted that it has serious weaknesses in its management of logistics functions and, in particular, inventory management.[1] Although not specifically identified with the systems we reviewed, these management weaknesses directly or indirectly contribute to the shortages of spare parts the Navy is facing. For example:

- We reported in January 2001 that nearly half of the Department's inventory exceeded war reserve or current operating requirements and that the Department had inventory on order that would not have been ordered based on current requirements.[2] Thus, the Department was purchasing items that exceeded requirements with funds that could be used to purchase needed parts.
- We have issued several reports on the Navy's problems in maintaining adequate oversight of material being shipped to and from military activities. For example, in March 1999, we reported that during fiscal years 1996-98, the Navy reported losing accountability of in-transit inventory, including some classified and sensitive items, worth over $3 billion.[3] In August 2000, we reported that the Navy had reported on actions that we believed would improve in-transit inventory management once fully implemented.[4] Some of the corrective actions had an estimated completion date of December 2000, while a long-term solution would be to reengineer the entire in-transit process.
- In November 2000, we reported that the Navy's processes for setting prices that customers pay for aviation spare parts had led to the Navy's seeking supplemental appropriations and delaying the procurement of needed parts that could affect readiness.[5]

[1] *Major Management Challenges and Program Risks: Department of Defense* (GAO-01-244, Jan. 2001).

[2] *Major Management Challenges and Program Risks* (GAO-01-244, Jan. 2001).

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

[4] *Defense Inventory: Status of Navy Initiatives to Improve Its In-Transit Inventory Process* (GAO/OSI/NSIAD-00-243R, Aug. 24, 2000).

[5] *Defense Acquisitions: Prices of Navy Aviation Spare Parts Have Increased* (GAO-01-23, Nov. 6, 2000).

In addition, the Department of Defense's long-standing financial management problems may also contribute to the Navy's spare parts shortages. As we recently reported, existing weaknesses in inventory accountability information can affect supply responsiveness.[6] Lacking reliable information, the Department of Defense has little assurance that all items purchased are received and properly recorded. The weaknesses increase the risk that responsible item managers may request funds to obtain additional unnecessary items that may be on hand but not reported.

[6] *Major Management Challenges and Program Risks* (GAO-01-244, Jan. 2001).

Appendix II: Description of EA-6B and F-14 Spare Parts Discussed in Report

Part	Description
Landing gear	Supports the aircraft while on the ground
Air navigational computer	Is a navigation component for the automatic flight control system
Antenna	Supports the ALQ-99 transmitters/receivers
Special indicator	Measures the angle between the longitudinal axis of the aircraft and the relative wind
Multiport panel	Loads encrypted data on board communications systems
Television sensor	Records mission data from the heads-up display for mission playback during post-flight reviews
Telescoping shaft	Maintains continuous flap and slat control during aircraft maneuvers
Transmitter	Transfers signals regarding the aircraft's movements and positions to the appropriate instruments
Filter	Is a part of the electronic countermeasure system and extracts incoming jamming signals that may disrupt the aircraft's electronics
Actuator	Helps to adjust the aircraft's wings for takeoff and landing
Wave-guide assembly	Used with the F-14D radar set, connects low power output to the transmitter
Axial pump	Provides power to the aircraft flight control system
Aircraft wing fairing	Protects the fuel lines and some hydraulics and helps maintain airflow integrity over the aircraft
Power module	Provides backup hydraulic power to the control surfaces in the event of a failure in the primary hydraulic system

Appendix III: Reasons for EA-6B and F-14 Spare Parts Shortages

Reason for shortage	EA-6B part	F-14 part
Actual demand was greater than anticipated	1. Air navigational computer 2. Movable canopy 3. Actuating cylinder 4. Multiport panel 5. Access cover 6. Structural panel 7. Cylinder assembly 8. Landing gear 9. Hydraulic swivel assembly 10. Engine duct assembly 11. Indicating light panel	1. Television camera 2. Hydraulic servovalve 3. Television sensor 4. Telescoping shaft 5. Aircraft wing fairing #1 6. Aircraft wing fairing #2 7. Frequency converter 8. Landing gear 9. Air-gas drier #1 10. Regulating valve
Delays in awarding contracts	1. Air navigational computer 6. Structural panel 12. Exhaust pipe-older version 13. Landing gear door 14. Exhaust pipe-new version 15. Countermeasure control 16. Gearbox assembly	1. Television camera 8. Landing gear 11. Axial pump 12. Solenoid valve 13. Air-gas drier #2 14.Wave-guide assembly 15. Aircraft oxygen system 16. Transmitter 17. Filter
Problems with contractors	5. Access cover 13. Landing gear door 17. Switch box 18. Antenna #1 19. Accelerometer 20. Antenna #2	2. Hydraulic servovalve 10. Regulating valve 11. Axial pump 12. Wave-guide assembly 18. Video sensor 19. Actuator 20. Pressure sensor #1 21. Pressure sensor #2 22. Motor generator
Delays in repairing parts at military facilities	7. Cylinder assembly 21. Right hand horn 22. Special indicator 23. Shouldered shaft	5. Aircraft wing fairing #1 6. Aircraft wing fairing #2 8.Landing gear 9. Air-gas drier#1 11. Axial pump 12. Solenoid valve 23. Fin tip assembly 24. Accelerometer
Other		
Item tracking problem	24. Receiver-transmitter	3. Television sensor
Purchased limited quantity	4. Multiport panel 15. Countermeasure control 24. Receiver-transmitter	
Procedural error	25. Solenoid valve	
Internal pricing error		25. Power module

Note: Part numbers assigned to identify each part. Part with the same name has more than one reason for shortages.

Source: Naval Inventory Control Point-Philadelphia.

Appendix IV: Comments From the Department of Defense

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

JUL 26 2001

Mr. David R. Warren
Director, Defense Capabilities
and Management
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, "NAVY INVENTORY: Parts Shortages are Impacting Operations and Maintenance Effectiveness," dated June 22, 2001 (GAO Code 709528/OSD Case 4028). The DoD generally concurs with the draft report.

The DoD appreciates the opportunity to comment on the draft report.

Sincerely,

Allen W. Beckett
Principal Assistant

Related GAO Products

Major Management Challenges and Program Risks: Departments of Defense, State, and Veterans Affairs (GAO-01-492T, Mar. 7, 2001).

Tactical Aircraft: Modernization Plans Will Not Reduce Average Age of Aircraft (GAO-01-163, Feb. 9, 2001).

Major Management Challenges and Program Risks: A Governmentwide Perspective (GAO-01-241, Jan. 2001).

High-Risk Series: An Update (GAO-01-263, Jan. 2001).

Defense Acquisitions: Prices of Navy Aviation Spare Parts Have Increased (GAO-01-23, Nov. 6, 2000).

Defense Acquisitions: Price Trends for Defense Logistics Agency's Weapon System Parts (GAO-01-22, Nov. 3, 2000).

Defense Inventory: Status of Navy Initiatives to Improve Its In-Transit Inventory Process (GAO/OSI/NSIAD-00-243R, Aug. 24, 2000).

Contingency Operations: Providing Critical Capabilities Poses Challenges (GAO/NSIAD-00-164, July 6, 2000).

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

Defense Logistics: Actions Needed to Enhance Success of Reengineering Initiatives (GAO/NSIAD-00-89, June 23, 2000).

Defense Inventory: Plan to Improve Management of Shipped Inventory Should Be Strengthened (GAO/NSIAD-00-39, Feb. 22, 2000).

Department of the Navy: Breakdown of In-Transit Inventory Process Leaves It Vulnerable to Fraud (GAO/OSI/NSIAD-00-61, Feb. 2, 2000).

Defense Inventory: Opportunities Exist to Expand the Use of Defense Logistics Agency Best Practices (GAO/NSIAD-00-30, Jan. 26, 2000).

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

Military Operations: Some Funds for Fiscal Year 1999 Contingency Operations Will Be Available for Future Needs (GAO/NSIAD-99-244BR, Sept. 21, 1999).

Department of Defense: Status of Financial Management Weaknesses and Actions Needed to Correct Continuing Challenges (GAO/T-AIMD/NSIAD-99-171, May 4, 1999).

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

Defense Reform Initiative: Organization, Status, and Challenges (GAO/NSIAD-99-87, Apr. 21, 1999).

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

Defense Inventory: Continuing Challenges in Managing Inventories and Avoiding Adverse Operational Effects (GAO/T-NSIAD-99-83, Feb. 25, 1999).

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

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

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

Defense Depot Maintenance: DOD Shifting More Workload for New Weapon Systems to the Private Sector (GAO/NSIAD-98-8, Mar. 31, 1998).

Defense Inventory: Management of Surplus Usable Aircraft Parts Can Be Improved (GAO/NSIAD-98-7, Oct. 2, 1997).

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- E-mail: fraudnet@gao.gov
- 1-800-424-5454 (automated answering system)