United States General Accounting Office

GAO

Report to Congressional Committees

May 2002

DEFENSE ACQUISITIONS

Navy Needs Plan to Address Rising Prices in Aviation Parts

GAO-02-565

Contents

GAO
Accountability * Integrity * Reliability

United States General Accounting Office
Washington, DC 20548

May 31, 2002

The Honorable Daniel K. Akaka
Chairman
The Honorable James M. Inhofe
Ranking Minority Member
Subcommittee on Readiness and Management Support
Committee on Armed Services
United States Senate

Since fiscal year 1999, the Navy's budget for repairing spare parts to support its aviation weapons systems has increased by about 50 percent, from $1.2 billion to $1.8 billion. Some military commands have asserted that the escalating cost of these parts has adversely impacted the funds available for the readiness of military forces.

This is the fifth in a series of reports on price trends in military spare parts.[1] This report, along with one on the Defense Logistics Agency (DLA) issued in April 2002, responds to your most recent request. It follows up on our November 2000 report on Navy aircraft parts in which we recommended actions to reduce and stabilize prices and overhead fees for aviation spare parts. As agreed, we also reviewed (1) the price increases for selected spare parts to identify the key factors contributing to those increases and (2) the Navy's progress in identifying and addressing the underlying causes for increased repairable spare parts prices.

For this review, we analyzed the repair costs and pricing data, for fiscal years 1999 to 2002, of 453 selected spare parts from three Navy weapon systems: the H-53 helicopter, the F/A-18 Hornet fighter and attack aircraft, and the AV-8B Harrier attack aircraft and their engines. We chose these systems because they were the same ones cited in our prior report that had experienced higher-than-average price increases between fiscal year 1994 and 1999. We then visited two Navy depots to collect detailed

[1] U.S. General Accounting Office, *Defense Acquisitions: Prices of Marine Corps Spare Parts Have Increased*, GAO/NSIAD-00-123 (Washington, D.C.: July 31, 2000); *Defense Acquisitions: Price Trends for Defense Logistics Agency's Weapon System Parts*, GAO-01-22 (Washington D.C.: Nov. 3, 2000); and *Defense Acquisitions: Prices of Navy Aviation Parts Have Increased*, GAO-01-23 (Washington, D.C.: Nov. 6, 2000). Also, U.S. General Accounting Office, *Defense Acquisitions: Status of Defense Logistics Agency's Efforts to Address Spare Part Price Increases*, GAO-02-505 (Washington, D.C.: Apr. 8, 2002).

information on 31 of the 453 parts to determine why their costs continued to rise. Our review's scope and methodology is described in further detail in appendix I.

Results in Brief

Overall, the prices for Navy repairable spare parts continue to climb for the three aircraft and their engines that we focused on in our November 2000 report. Our assessment of selected parts being repaired showed that while nearly 45 percent of the parts decreased in price, about 55 percent increased an average of 91.5 percent between fiscal year 1999 and 2002. The price increases were primarily due to the dramatically higher costs of the materials needed to repair spare parts,[2] although other factors, such as overhead fees and labor rates, contributed. However, we could not determine the underlying causes for the rising material costs because the Navy's databases lacked key information on each repair.

The Navy's progress in developing an overall plan to identify and address the reasons for higher spare parts prices has been limited. It has not yet fully carried out our November 2000 recommendation to identify and implement ways to reduce and stabilize prices. Further, the Navy has undertaken several initiatives, but most of these efforts focused on improving the reliability or the maintenance processes for repairing spare parts rather than on identifying why prices continue to rise. One initiative, the establishment of an automated serial number tracking system for spare parts, however, has potential for providing the specific information needed to determine why the spare parts prices are increasing and develop a strategy for stabilizing them. In addition, the Navy may learn from DLA's efforts to address causes for price increases—thereby allowing the Navy to better apply its resources supporting the readiness of the forces.

We are recommending that the Secretary of Defense direct the Secretary of the Navy to establish accountability within the Naval Supply Systems Command for preparing an action plan designed to identify and address the underlying causes of current price increases in aviation spare parts. Such a plan should incorporate the automated serial number tracking system for repairable spare parts that is currently under development and

[2] Spare parts refer to the components on aircraft, such as airframes, landing gear assemblies, fuel pumps, and generators that, when they fail to perform properly or reach the end of their service life, must be replaced with repaired (reconditioned) or newly purchased parts. These spare parts or components are manufactured from thousands of individual parts. These individual parts are also referred to as "materials" in this report.

lessons from DLA's efforts to address price increases. While the Department of Defense (DOD) generally concurred with the recommendations in this report, its response did not address the need to develop an overall plan with accountability to identify the underlying reasons for price increases in aviation spares.

Background

Spare parts are defined as repair parts and components, including kits, assemblies, and subassemblies required for the maintenance of all equipment. Repair parts and components can include repairable parts, which are returned to the supply system to be fixed when they are no longer in working condition, and consumable parts, which cannot be repaired cost-effectively.[3]

The Navy owns and operates about 4,000 aircraft. These aircraft contain about 70,000 repairable spare parts, such as landing gear, navigational computers, and hydraulic pumps. These spare parts, in turn, consist of thousands of individual parts or items. When any of these spare parts or individual items fails to perform properly, or reaches the end of its service life, it must be replaced with a repaired or newly purchased part. This maintenance work takes place at government repair facilities and commercial contractor facilities across the country. Providing logistics support for these aircraft is the responsibility of the Naval Air Systems Command and the Naval Supply Systems Command. Overall Navy logistics policies and procedures are the responsibility of the Deputy Chief of Naval Operations (Logistics).

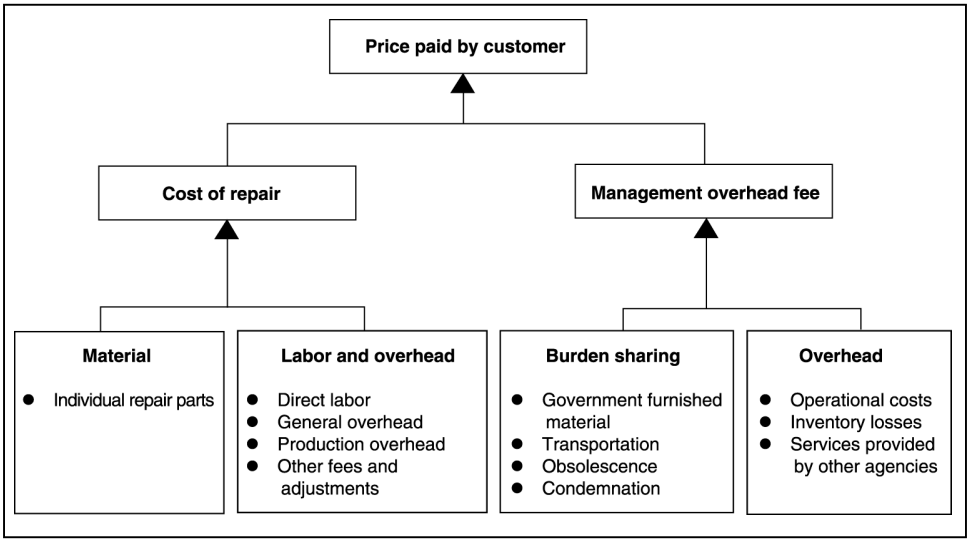
The Navy's repairable spare parts are managed under the Navy Working Capital Fund. This is a revolving fund that relies on revenues generated from the sale of parts and services to customers, which are then used to finance subsequent operations. The fund is expected to generate sufficient revenues to cover the full cost of operations and to break even over time—that is, not to have a gain or a loss. Customers order parts from the Navy's supply system and pay the working capital fund from their budgets. Each fiscal year, the Navy establishes the prices for spare parts, setting them to correspond with the customers' aggregate budgeted amounts. This concept, in theory, ensures that customers have, in the aggregate,

[3] Most consumable parts are managed by the DLA rather than by the military services, and thus are not considered in this report, but are discussed in GAO-02-505.

sufficient funds budgeted to purchase their anticipated requirements of spare parts.

The process of setting prices for spare parts begins 2 years before the fiscal year in which the prices take effect and involves customers, a number of Navy entities, and the Office of the Under Secretary of Defense (Comptroller). During this process, the customer price is set on the basis of projected customer requirements, as well as anticipated repair costs and management overhead fees.[4] Figure 1 shows the major elements that are considered in developing the customer price for Navy spare parts.

Figure 1: Major Elements Considered in Developing a Customer Price



[4] For repairable parts, the Navy sets two prices for its customers, the standard price and the net price. Standard price represents the cost should the supply system need to purchase a new part. Net price represents the standard price reduced by the value of the broken repairable part returned to the supply system. Since the broken part is returned to the supply system in about 90 percent of the fleet transactions, we focused on the net price.

Principal Findings

Selected Spare Parts Price Increases Are Driven by Higher Material Costs

In our recent review of prices for a selected group of spare parts for three Navy aircraft and their engines that we examined in the November 2000 report, we found that prices continued to rise. Our analysis suggested that the major factor driving these increases was the cost of the materials used to repair spare parts, while other factors, such as higher overhead fees and growing labor costs, also contributed. However, because of the lack of relevant information in the Navy's maintenance and repair databases, we were unable to determine what the underlying reasons were for the increases and as a result, what management action might be appropriate to reduce or stabilize the prices.

Prices of Repairable Spare Parts Rise

The prices of repairable aviation spare parts continued to increase dramatically. Between fiscal year 1999 and 2002, the total cost of spare parts increased from $1.6 billion to $2.7 billion. Of this total, the repair portion rose from $1.2 billion to $1.8 billion, an increase of 50 percent and represented 6.6 and 8.3 percent, respectively, of the Navy and Marine Corps' operation and maintenance funds that are used to sustain the readiness of the operating forces.

Our analysis of 453 selected spare parts showed that the prices paid by customers increased an average of 37 percent between fiscal year 1999 and 2002 (see app. II). We looked at these because they were the most costly repair parts [5] from three aircraft (the H-53 helicopter, the F/A-18 Hornet fighter and attack aircraft, and the AV-8B Harrier attack aircraft) and their engines. We found that the prices for 195 of the 453 parts dropped an average of almost 35 percent (see app. III) due to reductions in both repair costs and overhead fees. The prices for the remaining 258 parts, however, spiraled dramatically—an average of 91.5 percent during the 3-year period (see app. IV). The price hikes for 233 of the 258 spare parts (90 percent) were primarily due to higher repair costs, while those for the remaining 25 (10 percent) were due to higher management overhead fees.

Cost of Materials Drives Increases in Repair Costs

We selected 31 spare parts from the total population of 453 to identify the factors driving increases in repair costs. These parts were all repaired at

[5] The most costly repair parts are determined by multiplying the unit price by the quantity demanded.

government depots. As table 1 shows, the average increases in total repair costs for these 31 parts varied widely—from a modest 8 percent for the F/A-18 Hornet aircraft to more than 200 percent for two engine systems (F-402 and T-64). A closer look at the repair data indicated that the largest increases were generally attributable to the higher costs of the materials used to repair the spare parts, while a smaller increase resulted from higher labor costs.

Table 1: Changes in Total Repair Costs, by Material and Labor, for Selected Spare Parts (Fiscal Years 1999 to 2002)

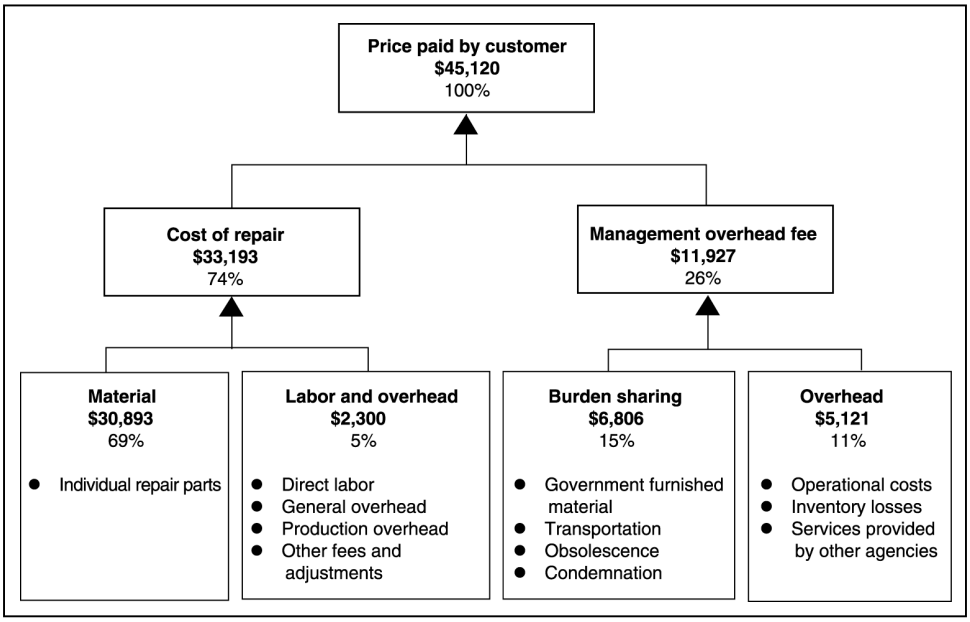
System	Spare parts (no.)	Avg. increase in labor cost (%)	Avg. increase in material cost (%)	Avg. increase in total repair cost (%)
AV-8B Harrier	4	1.7	137.5	39.0
F-402 engine	6	41.8	407.6	227.6
H-53 helicopter	6	42.9	94.0	67.4
T-64 engine	6	23.5	251.8	202.9
F/A-18 Hornet	4	29.8	22.4	7.9
F-404 engine	5	14.7	284.9	167.1
Total/average	**31**	**27.4**	**212.4**	**129.4**

For example, one of the parts, a rotor compressor for the F-402 engine, increased over 86 percent in price from $48,890 in fiscal year 1999 to $91,060 in fiscal year 2002. The material portion of the costs for repair had increased from $16,386 to $57,727 (over 252 percent), while labor had decreased from $10,739 to $9,092 (approximately 15 percent) and overhead had increased less than 12 percent from $21,765 to $24,241. (See app. V for detailed repair cost data for each part.)[6]

Figure 2 shows how the cost components contributed to the price that customers paid for another of these parts, a $45,120 turbine rotor for the F-404 engine in fiscal year 2002. It shows that a significant portion ($30,893, or 69 percent) of the price stemmed from the cost of the materials used to fix the rotor.

[6] We selected the 31 parts because they represented the most costly items being repaired for each of the systems, as of March 2001. We did not attempt to identify the underlying reasons that six of these parts decreased in price over fiscal years 1999 to 2002.

Figure 2: Costs Considered in Establishing the Customer Price for a Turbine Rotor in Fiscal Year 2002



A recent Naval Air Systems Command study underscored that rising material costs used in repairing spare parts are a contributing factor to price increases. The study compared repair costs in its maintenance facilities for the first quarter of fiscal year 1997 with those for the first quarter of fiscal year 2000. It concluded that while the average annual repair costs for more than 26,000 parts increased by 5 percent, the cost of materials rose by 8 percent; in contrast, labor costs rose less than 1 percent. Furthermore, the study showed that in the case of 105 high-demand parts material costs jumped by about 16 percent while labor costs increased by 3 percent.

We found a similar link between higher material costs and repairable spare parts price increases. Our examination of the aggregate prices of individual repair items used in the 31 spare parts indicated that three factors may have contributed to higher material costs for 25 of these parts: (1) higher prices for individual repair parts used, (2) the use of more parts in the repair process, and (3) changes in the mix of repair parts used. Another possible factor identified through discussions with Navy officials was that some repairs used new, more expensive repair parts. However, the Navy's data systems did not provide sufficient information on each

repair event to allow us to determine why the prices increased for each spare part. For example, we could discern that more material had been used in a repair, but we could not determine why this had happened: Had maintenance procedures changed? Was the repairable part in unusually poor condition? Had there been extensive cannibalization of the part's components? Or were there other reasons? Without more specific information on each spare part or repair event, management would not be able to determine—or address—the reasons for rising repair costs.

Available Data Limits Ability to Identify Causes for Price Increases

As noted above, our ability to determine the reasons for rising spare part costs was impaired because the Navy lacked an effective data system to collect and analyze information relevant to material costs and usage. The current data system tracks repair costs for groups of spare parts but not for individual parts. The costs are accumulated for the group, divided by the number of spare parts in the group and analyzed as an average cost per item in the group. As a result, government repair facilities cannot determine the cause of significant increases in repair costs for an individual spare part. For example, the average reported material cost for individual repair parts needed to repair compressors for the F-402 engine increased from $14,269 in fiscal year 1998 to $65,494 in fiscal year 2000. While the detailed requisition data identifies what materials were ordered, it is impossible to determine—when more than one repair is associated with the requisition—how much of the material was used in a specific repair. Consequently, the fact that more material is being used on multiple repairs can be discerned, but not the reason for the increased usage. In addition, there is no indication of whether the differences in materials ordered are due to the repair of one part or to the group as a whole.

Navy Lacks an Overall Plan to Identify Underlying Causes of Price Increases

The Navy has made little progress in identifying the underlying causes of spare parts price increases. While it has various initiatives aimed at reducing overall costs, it does not have a planned set of actions to identify the underlying causes of price increases. The Navy has only partially implemented a recommendation we made in our November 2000 report to identify and implement solutions to reduce and stabilize prices. It has undertaken several initiatives to control repair costs, but these have centered on enhancing the reliability and maintenance process, which could help stabilize prices for repairable parts. However, they do not deal with the underlying reasons for cost increases. One new initiative, which will allow the Navy to track individual spare part items by their serial numbers, may provide the tool it needs to effectively monitor and control its spare part prices. Also, the Navy might learn from DLA's efforts to address price increases for consumable spare parts.

Partial Implementation of Past Recommendation Related to Price Increases

Of three recommendations we made in our November 2000 report, the first one, which was directly concerned with investigating why prices were rising, has been only partially implemented. This one recommended that the Secretary of Defense ensure that the Navy follow through on the results of its planned studies by identifying and implementing solutions to reduce and stabilize prices. See appendix VI for a discussion of the other two recommendations.

To start addressing this recommendation, the Navy has undertaken some cost-controlling initiatives aimed at improving the reliability of spare parts and is implementing a serial number tracking program to improve inventory management. However, to date, the initiatives have not focused on identifying the reasons for price increases.

New Initiatives Focus on Improving Reliability and Repair Processes

The Navy's recent initiatives and studies (by contractors, headquarters, and repair depots) center on improving the reliability of its aviation spare parts in order to control its flying hour costs. Conceptually, if the reliability of parts used in the Navy's aviation systems is improved, then the demand for those parts will fall since they will not be replaced as often, and the cost to the flying hour program will be reduced. While this approach has merit, it focuses only on the demand side of the total flying hour program cost equation.[7] As a result, significant price increases or decreases can occur without management being aware of the underlying causes.

An April 2001 study by the Center for Naval Analyses showed that the cost of repairable parts continued to climb, even though the number of Navy flight hours recorded decreased. In examining why the cost per flying hour increased from fiscal year 1992 to fiscal year 1999, the study concluded that the main reasons were a decline in the number of hours flown and the increased age of Navy aircraft. The study also found that price increases for spare parts, overhead costs, quantity of materials ordered, and the mix of spare parts ordered also contributed significantly to higher flying hour costs. Price increases were identified as a significant factor that should be studied further. A Navy logistics official told us the service has used the study to justify a potential 2 percent budget increase for repairable spare parts starting in fiscal year 2000.

[7] This approach could be more costly to the Navy's overall budget if the reliability improvement resulted in substantial parts price increases.

The Navy has recently undertaken a number of initiatives, such as the Logistics Engineering Change Proposals program,[8] that are designed to control the costs of individual spare parts by improving their reliability. These efforts focus on improving the reliability of repairable parts, and thereby reducing demand while reducing or eliminating support costs. Repairable parts are selected for the study on the basis of their high historical costs and low reliability. Then the proposals are evaluated to determine whether a change in the part would be justified based on the anticipated investment return equal to two times the cost within 5 years. While these efforts have resulted in some significant reported cost savings, they have been geared toward increasing the reliability of parts, thereby reducing the total costs of these parts.

Other ongoing initiatives are directed at streamlining the maintenance operations at government repair facilities, and thus potentially lowering the overhead costs that are charged to repairs. The Business Process Reengineering effort, which began in fiscal year 1999, focuses on the repair and modification process at the government repair facilities. Through this effort, the Navy expects to reduce its acquisition costs and overhead charges by adopting new acquisition methods, such as prime vendors, direct vendor deliveries, and electronic commerce. It also expects to reduce its labor costs by automating the requisition process, outsourcing material handling functions, and improving the workload forecasting process. It plans to achieve additional savings from its component repair segment in the form of increased part reliability. Another related initiative is the Manufacturing Resource Planning effort, scheduled for completion by the end of fiscal year 2002. This initiative is designed to cut costs by reducing inventories and shortening lead times on parts requisitions at government repair facilities. It will do this by developing a more efficient and effective process for forecasting the demand for repair parts and more closely aligning this demand with ordering parts with anticipated workloads.

Tracking System May Identify Causes of Repair Cost Hikes

One promising initiative—a serial number tracking system for the Navy's inventory of parts—has the potential for identifying the underlying reasons for price changes. This effort was initiated by the Naval Aviation

[8] Logistics Engineering Change Proposals are Naval Inventory Control Point sponsored reliability or maintainability changes designed to reduce or eliminate support costs while maintaining or improving safety and performance.

Maintenance Supply Readiness group,[9] which recognized that the Navy needed to acquire comprehensive information on its entire inventory in order to reduce its overall costs.

As a result, in November 1998 it tasked the Naval Supply Systems Command to begin developing a serial number tracking system designed to (1) reduce total inventory ownership costs, (2) reduce secondary inventory levels, and (3) enhance customer satisfaction.

This tracking system is designed to collect data on individual parts throughout the Navy's supply and maintenance systems. The Navy recently completed testing its serial number tracking effort and began installing "smart buttons" (an automatic identification technology) on depot-level repairable parts for the H-53 helicopters. The smart buttons store all of the necessary identification (including part and serial number), mission configuration, repair requirements, and repair history information for that particular part.

The Navy plans to install this technology throughout its fleet by fiscal year 2005, at an estimated cost of $58 million appropriated over fiscal years 2002 through 2005. Navy officials believe the tracking system will be helpful in identifying the causes of rising parts costs and decreases in reliability. For example, it could be used to analyze parts usage at maintenance facilities and the effectiveness of maintenance actions. It could also be used to evaluate different maintenance concepts, such as performing complete overhauls versus only repairing parts as necessary.

DLA's Efforts to Address Causes for Price Increases Might Benefit the Navy

As stated in our April 2002 report, DLA has undertaken a range of efforts to address significant consumable spare parts price increases. It recently completed two price trend analyses, is examining the causes for these increases, and plans to provide detailed explanations and remedies in a report to DOD. In addition, DLA has other efforts underway, including three technology initiatives, aimed at providing better information for determining price reasonableness.

[9] The Naval Aviation Maintenance Supply Readiness group consists of representatives from Commanders In Chief Atlantic and Pacific Fleets, Commander of the Naval Air Systems Command, and the Commander of the Naval Supply Systems Command.

Conclusions

As the overall prices of repairable spare parts continue to rise, the Navy is making efforts to control total costs by improving the reliability of spare parts and by reducing its overhead maintenance costs. However, it does not have clear accountability and a planned approach to determine why the prices are changing—increasing or decreasing. Consequently, the Navy lacks the information to identify what management steps it can take to control prices. The deployment of a serial number tracking system, designed to accumulate detailed repair and use information on individual spare parts and their components, represents a vehicle for providing managers with the information they need to identify underlying causes for price increases. In addition, DLA has efforts underway to address underlying causes for price increases.

Recommendations for Executive Action

In order to develop the information and action necessary to address the underlying causes for price increases, we recommend that the Secretary of Defense direct the Secretary of the Navy to:

- Develop an overall plan with implementation milestones, resource requirements, and accountability within the Naval Supply Systems Command to identify the underlying reasons for price increases in aviation spare parts. The plan should include, but not be limited to, using the comprehensive data on individual spare parts from the serial number tracking system now under development, as well as lessons learned from DLA's efforts to address price increases.

- Utilize information generated from the plan's initiatives to develop management strategies, which provide assurance that future prices represent a reasonable cost to the customer.

Agency Comments and Our Evaluation

In written comments on a draft of this report, DOD generally agreed with our principle findings and recommendations. The comments focused on the positive steps the Navy has taken to address the rising costs associated with spare parts within the flying hour program. In particular DOD stressed that ongoing initiatives such as Logistics Engineering Change Proposals are implemented to reduce overall costs to the Navy, not hold them steady. This report was adjusted to reflect this point. However, DOD's response did not address the need to develop an overall plan with accountability to identify the underlying reasons for price increases in aviation spares. We continue to believe these actions are necessary and, as part of our normal follow-up process, in the future will assess the

actions taken and make any additional recommendations that we believe are appropriate.

The Department's comments are reprinted in their entirety in appendix VII.

We are sending copies of this report to interested congressional committees, the Secretaries of Defense and the Navy; the Commandant of the Marine Corps; and the Director, Office of Management and Budget. We will also make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at http://www.gao.gov.

Please contact me at (202) 512-8412 if you or your staff have any questions regarding this report. Key contributors to this report were Richard Payne, John Wren, Daniel Omahen, Nancy Rothlisberger, Jason Jackson, John Van Schaik, and Nancy Benco.

David R. Warren
Director, Defense Capabilities
and Management

Appendix I: Scope and Methodology

To identify the key factors contributing to price increases, we performed an analysis of selected repairable spare parts. Specifically, we chose 453 repairable parts used in the F/A-18, AV-8B, and H-53 aircraft and helicopters and their engines and analyzed the pricing and repair cost trends. These three systems and their engines had been identified, in our November 2000 report, as having experienced higher-than-average price increases. The 453 were the most costly parts, in terms of the amounts that Navy customers spent (the unit price multiplied by the quantity sold), based on the most recent data available at the time of our review.

Our review of the 453 parts showed that prices increased primarily because of higher repair costs. We then selected 38 parts that had the largest repair cost increases for further review. We found that 31 of these parts were repaired at government facilities, and we obtained and analyzed their costs during fiscal years 1999 through 2002 as provided by either the Naval Inventory Control Point or the applicable Naval Aviation Depot. After finding that increased repair costs were due to higher material costs used in the repairs, we obtained detailed lists of the orders for these materials. To better understand the general reasons for the cost increases, we analyzed the quantities ordered and the prices paid for them during fiscal years 1998 through 2001. We also discussed the reasons for major material and labor cost increases with officials at the Naval Aviation Depots at Cherry Point, North Carolina, and Jacksonville, Florida.

To assess the Navy's progress in identifying and addressing the underlying causes for increased prices of spare parts, we (1) identified and reviewed prior GAO reports as well as Navy studies and initiatives relating to controlling total costs and (2) evaluated Navy actions to implement the recommendations of our November 2000 report. We obtained studies on the rising costs of repair parts and held discussions with responsible officials at the Center for Naval Analyses, the Naval Center for Cost Analysis, and the Naval Audit Service. We also discussed and obtained information on the status of the Navy's Aviation Maintenance Supply Readiness Group's efforts to address the repair part cost and reliability issues with Naval Air Systems Command officials as well as information on the status of corrective actions from the Navy's Web Site. We also reviewed the Navy's Logistics Transformation Plan for fiscal year 2000 and the Navy and Marine Corps' report on the best commercial inventory practices for the third quarter of fiscal year 2001 to identify initiatives aimed at mitigating price increases. We discussed several of these and other initiatives with officials at the Naval Supply Systems Command, Naval Inventory Control Point, Naval Air Systems Command, and Naval Aviation Depots at Jacksonville, Florida, and Cherry Point, North Carolina.

In evaluating the Navy's progress in implementing our recommendations, we relied on information gathered on various studies and initiatives as well as on discussions with officials at Navy headquarters and the Naval Supply Systems Command.

We did not independently verify the pricing data provided by the Naval Supply Systems Command or the Naval Aviation Depots. However, recognizing that it was official data, we took several steps to address its quality. Specifically, we tested the completeness of the data, looking for empty or questionable fields. We identified some discrepancies in the data and discussed them with Naval Supply Systems Command and depot officials. Where appropriate, we adjusted the data based on additional information they provided. We performed our review between June 2001 and May 2002 in accordance with generally accepted government auditing standards.

Appendix II: 453 Spare Parts with High Costs

The 453 most costly repair parts for the 3 aircraft and their engines, which we focused on in our November 2000 report, have continued to experience price increases since fiscal year 1999. Table 2 summarizes the average increase in the repair cost for the parts, the average increase in what the supply system charged its customers, as well as the annual rate of increase for the parts selected for review. Overall, the average increase in the price charged to customers for these parts was 37.2 percent between fiscal year 1999 and fiscal year 2002.

Table 2: Reported Increases in Repair Costs and Customer Prices for 453 Selected Spare Parts, Fiscal Years 1999 to 2002

System	Spare parts (no.)	Avg. increase in repair cost (%)	Avg. increase in customer price (%)	Avg. annual rate of customer price increase (%)
AV-8B Harrier	99	23.7	24.0	7.4
F/A-18 Hornet	92	37.6	22.9	7.1
H-53 helicopter	98	69.9	58.9	16.7
F-402 engine	66	44.4	37.7	11.2
F-404 engine	58	35.2	28.1	8.6
T-64 engine	40	67.4	62.6	17.6
Total/average	**453**	**44.8**	**37.2**	**11.1**

Appendix III: 195 Spare Parts with Reported Price Decreases

Within the population of 453 parts, there were 195 parts that experienced a drop in the customer price between fiscal year 1999 and 2002. Table 3 summarizes the average decrease in the repair cost, the average decrease in what the supply system charged its customers, and the annual rate of decrease for the parts. The average decrease in price for these 195 parts was about 35 percent.

Table 3: Parts with Reported Repair Cost and Customer Price Decreases Between Fiscal Years 1999 and 2002

System	Spare parts (no.)	Avg. decrease in repair cost (%)	Avg. decrease in customer price (%)	Avg. annual rate of customer price decrease (%)
AV-8B Harrier	48	32.5	33.4	12.7
F/A-18 Hornet	53	26.5	34.1	13.0
H53 helicopter	28	22.1	29.1	10.8
F-402 engine	30	38.8	41.6	16.4
F-404 engine	24	32.6	36.3	14.0
T-64 engine	12	29.7	32.8	12.4
Total/average	**195**	**30.2**	**34.6**	**13.2**

Appendix IV: 258 Spare Parts with Reported Price Increases

Almost 60 percent, 258 of the 453 parts experienced an increase in price between fiscal year 1999 and 2002. Table 4 summarizes the average increase in the repair cost, the average in what the supply system charged its customers, and the annual rate of increase for these parts. Price increases for these 258 parts averaged 91.5 percent.

Table 4: Spare Parts with Reported Repair Cost and Customer Price Increases, Fiscal Years 1999 to 2002

System	Spare parts (no.)	Avg. increase in repair cost (%)	Avg. increase in customer price (%)	Avg. annual rate of customer price increase (%)
AV-8B Harrier	51	76.5	78.1	21.2
F/A-18 Hornet	39	124.6	100.3	26.1
H53 helicopter	70	106.7	94.1	24.7
F-402 engine	36	113.7	103.8	26.8
F-404 engine	34	83.0	73.5	20.2
T-64 engine	28	109.1	103.4	26.7
Total/average	**258**	**101.5**	**91.5**	**24.2**

Appendix V: Reported Repair Cost Increases for 31 Parts

Table 5: Reported Increases in Material and Repair Cost for 31 Selected Parts, Fiscal Years 1999 and 2002

National Item Identification Number	System/ engine	Description	FY99 material cost ($)	FY99 government repair cost ($)	FY02 material cost($)	FY02 government repair cost ($)	Change in material (%)	Change in government repair (%)
995775996	F-402	Tube, engine	1,450.00	2,529.80	15,976.00	18,066.99	1001.79	614.17
012016017	F-404	Stator assembly, fan	1,632.00	2,904.00	12,176.00	15,223.00	646.08	424.21
001645872	T-64	Nozzle, turbine	4,078.00	4,980.22	24,847.00	26,021.46	509.29	422.51
990625791	F-402	Gearbox, accessory	1,511.00	4,068.62	15,135.00	19,143.67	901.65	370.52
013896529	F-404	Rotor, low pressure turbine	3,181.00	6,051.00	25,681.00	27,325.00	707.32	351.58
013514848	T-64	Nozzle, turbine	3,078.00	3,571.50	13,997.50	15,063.39	354.76	321.77
013297911	H-53	Camshaft assembly	2,073.00	4,338.80	11,500.00	15,256.86	454.75	251.64
012866704	T-64	Nozzle, turbine	4,181.00	6,134.46	18,111.00	19,159.05	333.17	212.32
995550105	F-402	Hub, rotor, gas turbine	25,697.00	29,865.40	79,680.00	88,484.40	210.08	196.28
012991530	T-64	Nozzle, turbine	3,401.00	4,480.80	10,998.50	12,155.63	223.39	171.28
011506952	F-402	Rotor, compressor	16,386.00	27,125.14	57,727.00	66,818.90	252.29	146.34
013664970	F-404	Rotor, turbine	13,040.00	15,524.00	30,893.00	33,193.00	136.91	113.82
011506731	F/A-18	Cylinder and piston	17,107.50	29,006.50	26,060.00	52,990.50	52.33	82.68
011723653	AV-8B	Servo cylinder	811.00	4,690.26	4,380.00	7,916.65	440.07	68.79
993318213	F-402	Chamber, combustion	18,814.00	34,927.17	38,766.00	57,166.96	106.05	63.67
012809889	H-53	Cooler, fluid gearbox	1,266.50	2,951.80	706.50	4,684.08	-44.22	58.69
012185661	H-53	Head, rotary wing	130,151.00	248,777.73	260,546.00	386,193.26	100.19	55.24
012854668	T-64	Rotor, turbine	30,757.00	35,864.21	50,391.00	54,370.11	63.84	51.60
001676758	AV-8B	Generator, alternating	6,992.00	9,403.26	11,966.00	13,710.36	71.14	45.80
013642188	T-64	Liner, combustion chamber	2,184.50	3,622.79	2,753.50	4,994.88	26.05	37.87
014290072	H-53	Wheel, landing gear	521.00	1,733.77	869.00	2,345.24	66.79	35.27
013177867	AV-8B	Generator-starter	10,010.00	18,254.88	13,500.00	24,058.96	34.87	31.79
012813618	H-53	Gearbox, accessory	15,141.00	25,254.12	18,843.50	31,055.58	24.45	22.97

National Item Identification Number	System/ engine	Description	FY99 material cost ($)	FY99 government repair cost ($)	FY02 material cost($)	FY02 government repair cost ($)	Change in material (%)	Change in government repair (%)
013000940	F/A-18	Optics, stabilizer	4,957.00	19,241.00	11,010.00	21,857.00	122.11	13.60
011970008	AV-8B	Landing gear, retractable	11,660.00	22,662.40	12,131.00	24,815.62	4.04	9.51
013513373	F/A-18	Servo cylinder	5,573.00	8,120.00	5,112.25	8,034.50	-8.27	-1.05
014077972	F-404	Stator, compressor	22,681.67	27,290.00	19,334.00	24,016.67	-14.76	-11.99
013901118	H-53	Servo cylinder	5,090.50	8,813.59	3,146.00	7,125.62	-38.20	-19.15
011626087	F-402	Turbine, high pressure	111,006.00	113,923.26	82,099.00	84,727.27	-26.04	-25.63
013693370	F-404	Chamber, combustion	9,271.75	12,753.00	4,537.25	7,400.00	-51.06	-41.97
014426420	F/A-18	Pylon, aircraft	27,070.00	32,302.00	6,358.00	11,714.00	-76.51	-63.74
						Average	**212.40**	**129.37**

Appendix VI: Implementation of November 2000 GAO Recommendation on Prices of Navy Aviation Spare Parts

The Navy's efforts to implement the recommendations from our November 2000 report on the rising prices of aviation depot-level repairable parts have been mixed. The report contained three recommendations: (1) the Secretary of Defense ensure that the Navy follow through on the results of its planned studies by identifying and implementing solutions to reduce and stabilize prices and surcharge rates, (2) the Secretary of Defense direct the Navy to allocate condemnation costs to the specific parts or groups of parts incurring the costs, and (3) the Secretary of Defense report to the Congress on the Navy's progress in addressing these recommendations.

The Navy has only partially implemented our first recommendation. The Navy has undertaken some cost controlling measures aimed at improving reliability and is implementing a serial number tracking program to improve inventory management, as discussed above.

The Navy has implemented the second recommendation by adjusting its pricing practice such that condemnation costs are being allocated to specific groups of repairable parts. Beginning in fiscal year 1999, the Navy started allocating certain costs to the parts that incur those costs. Initially, transportation costs were allocated using this approach. The Navy began allocating condemnation and obsolescence costs in this manner in fiscal year 2000. At the same time, the Navy instituted a tiered pricing strategy to allocate general overhead costs and specific, identifiable costs based on the level of management required. These efforts have resulted in a better match of expenses with specific parts.

In response to our third recommendation, the Navy has only partially reported the results of its efforts to implement the first two recommendations to the Congress. In its fiscal year 2003 budget submission, the Navy reported its efforts to allocate condemnation costs, as well as transportation and obsolescence costs, to specific groups of parts. In addition, the Navy reported it was taking action to limit the general overhead rate to 30 percent or less. However, the Navy did not report any specific actions to reduce and stabilize prices.

Appendix VII: Comments from the Department of Defense

UNDER SECRETARY OF DEFENSE
1100 DEFENSE PENTAGON
WASHINGTON, DC 20301-1100

COMPTROLLER

MAY 20 2002

Mr. David R. Warren
Director, Defense Capabilities and Management
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Warren:

This is the Department of Defense (DoD) response to the GAO draft report, "DEFENSE ACQUISITIONS: Navy Needs Plan to Address Rising Prices in Aviation Parts," dated April 15, 2002 (GAO Code 350078). Overall, DoD concurs with the draft report. Specific comments for each recommendation are enclosed. My point of contact is Mr. Clai Ellett, 703-697-1880, ellettc@osd.pentagon.mil.

Sincerely,

Dov S. Zakheim

Enclosure:
DoD Comments to GAO Recommendations

cc:
ADUSD(SCI)
ASN(FM&C), FMB4
DoD IG

GAO DRAFT REPORT DATED APRIL 15, 2002
(GAO CODE 350078)

"DEFENSE ACQUISITIONS: NAVY NEEEDS PLAN TO ADDRESS RISING PRICES IN AVIATION PARTS "

DEPARTMENT OF DEFENSE COMMENTS TO THE GAO RECOMMENDATIONS

RECOMMENDATION 1: The GAO recommended that the Secretary of Defense direct the Secretary of the Navy to develop an overall plan with implementation milestones, resource requirements, and accountability to identify the underlying reasons for price increases in aviation spare parts. The plan should include, but not be limited to, using the comprehensive data on individual spare parts from the serial number tracking system now under development, as well as lessons learned from the Defense Logistics Agency's efforts to address price increases. (p. 12/GAO Draft Report)

DOD RESPONSE: The Department concurs with the recommendation with the following comments. Over the past several years, various Navy commands have worked diligently in an effort to address and correct key systemic problems that impact aviation cost growth and readiness. Aviation spare parts in the aggregate are but a single element within a complex and intricately balanced system necessary to keep aircraft safe and operating at their optimal capability. While such integrated logistics support elements as manning and training can adversely affect the cost per flight hour, the preponderance of rising costs are tied closely to aging aircraft and increased utilization rates. While it is clear that considerable challenges exist in the road ahead, the Navy is confident continued initiatives such as Serial Number Tracking, Logistics Engineering Change Proposals (which are implemented to reduce overall costs rather than just holding them steady, as contended in this draft report), and its Enterprise Resource Planning projects will ultimately enable the Department to better identify the underlying reasons for price increases among aviation and nonaviation spare parts. With more robust information, the Navy will be better able to identify contributing factors of cost growth and take corrective action, if deemed appropriate.

RECOMMENDATION 2: The GAO recommended that the Secretary of Defense direct the Secretary of the Navy to utilize information generated from the plan's initiatives to develop management strategies, which provide assurance that future prices represent a reasonable cost to the customer. (p. 12/GAO Draft Report)

DOD RESPONSE: Concur.

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