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Report to the Chairman, Committee on
Armed Services, House of Representatives

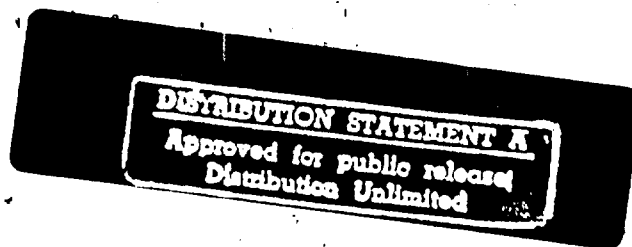


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NAVY MAINTENANCE

Aviation Component Repair Program Needs Greater Management Attention



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

National Security and
International Affairs Division

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July 6, 1989

The Honorable Les Aspin
Chairman, Committee on
Armed Services
House of Representatives

Dear Mr. Chairman:

In response to discussions with your Office, we reviewed the Navy's aviation component repair program. We found that the Navy can improve the program by providing sufficient management controls to ensure reasonable repair prices and focusing attention on correcting the causes of declining productivity.

We are sending copies of this report to the Chairmen, Senate Committee on Governmental Affairs, House Committee on Government Operations, Senate Committee on Armed Services, and Senate and House Committees on Appropriations; the Director, Office of Management and Budget; and the Secretaries of Defense and the Navy.

This report was prepared under the direction of Martin Ferber, Director, Navy Issues. Other major contributors are listed in appendix II.

Sincerely yours,

Frank C. Conahan
Assistant Comptroller General

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Executive Summary

Purpose

→ The Naval Aviation Depots generated revenues of about \$1.7 billion in fiscal year 1988 by overhauling and repairing such items as airframes, engines, and components. The component repair program was the largest segment with revenues of \$601 million. GAO reviewed the component repair program to evaluate the reasonableness of repair prices, management oversight, and efforts to improve efficiency.

Background

→ Industrial fund activities, such as the Naval Aviation Depots, perform functions of an industrial or commercial nature for customers that reimburse the activities for costs incurred. The depots' primary customer for the component repair program is the Navy's Aviation Supply Office, which is responsible for providing aviation components to the fleet.

→ Each depot determines the price charged the Aviation Supply Office for each type of component repair. To help ensure that the prices are reasonable, depots use standards that reflect the number of labor hours that the repair should require. Ideally, this pricing process should result in the depots' being reimbursed at a level closely approximating the actual cost of the repairs. (725)

Results in Brief

GAO found that the Navy had not provided sufficient management controls to ensure that component repair prices were reasonable -- prices were not adequately supported, audits and reports were not made, and variances between actual and billed labor hours were not analyzed. As a result, significant gains or losses on individual component repairs continued year after year. Between fiscal years 1985 and 1987, the depots charged the Aviation Supply Office \$19.4 million more than was justified by the actual labor hours used.

While the Navy has several initiatives underway to improve depot efficiency and contain costs, reported productivity in the component repair program declined 13 percent between fiscal years 1985 and 1988.

Principal Findings

Support for Prices Is Inadequate

Internal controls were lacking to ensure that component repair prices charged the Aviation Supply Office were adequately supported. GAO's examination of the required backup documentation for 75 component

prices showed that support either could not be located or was inaccurate for 68 percent of the prices. In addition, required support for depot adjustments to many repair prices to account for production shop inefficiencies also was unavailable or inaccurate. In many cases, prices were not updated as required to reflect changes in repair processes.

Naval Air Systems Command controls to ensure compliance with instructions requiring accurate, up-to-date, and auditable workload standards have declined. For example, the existing standards instruction requires headquarters personnel to review the quality of each depot's entire workload standards program. However, since 1982 headquarters has not performed these reviews. Also, quarterly reporting to headquarters by the depots on the status of their standards programs was discontinued in August 1987.

Variance Analyses Are Not Made

Variance analyses were not required or routinely performed by the depots. Such an analysis is a basic management tool for comparing planned and actual results and could be used to signal the need for management attention and corrective action. In many cases, depots continued to overcharge or undercharge for component repairs year after year without taking action to see why this was happening. In some cases, depots arbitrarily increased the labor hours charged for a repair without appropriate analysis.

GAO's analysis of these cases showed that actual labor hours used were significantly less than the hours charged for the repairs. For example, although GAO found a depot already was making a financial gain on the repair of a fuel control component, the depot increased the labor hours charged without making any analysis, and thus increased the price of the repair. The additional labor charges cost the Aviation Supply Office an extra \$1.6 million for the repair of the component. Depot officials could not explain why they made the change without performing any analysis.

More Attention to Efficiency Improvement Is Needed

Between fiscal years 1985 and 1988, the depots' reported efficiency in the component repair program declined 13 percent while the efficiency in the airframe and engine repair programs increased. The Navy has not focused on identifying and correcting the causes of this decline. Also, the depots were not complying with requirements to establish and track performance improvement goals. Maintaining accurate, up-to-date standards is a key element in improving the efficiency of the component

repair program. One cost containment initiative (the "Dirty Dozen" program) aimed solely at component repairs has produced reported savings; however, some design problems have limited the program's success.

Recommendations

GAO's report contains a number of recommendations to the Navy designed to ensure that

- component repair prices are well-supported,
- internal controls are adequate,
- variances between actual and standard labor hours are reviewed,
- causes of the productivity decline are addressed, and
- performance goals are established and tracked.

Agency Comments

The Department of Defense agreed with GAO's findings and recommendations and indicated that the Navy was initiating a number of corrective actions. (See app. I.) These actions include developing a revised workload standards program, implementing a variance analysis program, directing an improved performance measurement system, and taking steps to improve productivity and efficiency.

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Abbreviations

ASO	Aviation Supply Office
DOD	Department of Defense
GAO	General Accounting Office
NADEP	Naval Aviation Depot
NAVAIR	Naval Air Systems Command

Introduction

In addition to overhauling airframes and engines, the Naval Aviation Depots (NADEPS) perform depot-level maintenance on the separate repairable components associated with airframes, engines, and avionics systems. Such components range from aircraft landing gears and engine parts to the sophisticated "black boxes" essential to successful weapon system operations.

In fiscal year 1988, the six NADEPS overhauled almost 200,000 components as part of the component repair program. Accounting for revenues of about \$601 million in fiscal year 1988, this program has been the largest of the NADEPS' programs as shown in table 1.1.

Table 1.1: NADEP Revenues by Program

Dollars in millions					
	1985	1986	1987	1988	Total
Components	\$814	\$639	\$654	\$601	\$2,708
Airframes	383	437	465	435	1,720
Engines	328	345	359	266	1,298
Missiles	18	17	15	9	59
Manufacturing	36	48	34	41	159
Other support	337	381	397	353	1,468
Total	\$1,916	\$1,867	\$1,924	\$1,705	\$7,412

Funding for Component Repairs

The NADEPS are industrial fund activities operating under the Naval Air Systems Command (NAVAIR). Industrial fund activities, established by the Department of Defense (DOD) with the approval of the Congress in 1949, use working capital funds rather than direct appropriations to finance the cost of goods and services provided to customers. The customers use annual appropriations to reimburse these activities for work performed. The financial goal of these activities is to break even, i.e., to cover costs without experiencing a gain or loss. In addition to the NADEPS, industrial fund activities include shipyards, ordnance stations, and other activities that perform functions of an industrial or commercial nature.

The NADEPS' primary customer for the component repair program is the Navy's Aviation Supply Office (ASO). ASO determines repair requirements for aviation components on the basis of fleet needs. ASO then contracts with the NADEPS or commercial aircraft maintenance contractors to perform the repairs.

From a financial standpoint, ASO operates basically in the same fashion as an industrial fund activity. In other words, ASO is reimbursed for its costs by selling the repaired items to fleet users, primarily the Navy's aviation squadrons. The aviation squadrons request annual appropriations for component repairs as part of the Navy's flying hour program.

Determining Component Repair Prices

Each NADEP determines the price to charge ASO for component repairs. To ensure that repair prices are reasonable and supportable, the NADEPs rely upon a workload standards program to help develop the prices. Under this program, a workload standard is developed for each component that reflects the number of labor hours a repair should require. Adjustments are usually made to provide for production shop inefficiencies and for repairs started but not completed because the item is found to be beyond economical repair. Most NADEP workload standards are classified as engineered standards because established industrial engineering techniques were used in their development.

While workload standards traditionally have been used to promote production efficiencies, the NADEPs also use standards as the basis for pricing component repairs. The repair price charged ASO is determined by multiplying a component's workload standard (which is expressed in labor hours) by each NADEP's hourly Navy Industrial Fund rate for the given fiscal year. This rate, established by the Navy Comptroller, is designed to cover costs associated with NADEP operations, such as overhead, labor, and materials. Ideally, this pricing process should result in the NADEPs' being reimbursed at a level that closely approximates the actual cost of the repairs.

Since each NADEP component repair price is developed under a standards program, ASO generally accepts the price charged and pays the NADEP that amount for each component repaired. For those components repaired by private contractors, ASO uses competitive bidding to determine the prices.

Objectives, Scope, and Methodology

Our objective was to evaluate how well the component repair program was working. Our specific objectives were to (1) determine whether repair prices were well-supported and reasonable, (2) review Navy efforts to improve efficiency and contain costs, and (3) assess the internal controls used to help manage the program.

To accomplish these objectives, we performed detailed audit work at the four offices having management responsibility for the component repair program and at two of the six NADEPS. At each organization visited, we interviewed responsible agency personnel and reviewed applicable policies, procedures, and pertinent documents. The organizations visited were the

- Chief of Naval Operations, Washington, D.C.;
- Naval Air Systems Command, Washington, D.C.;
- Aviation Supply Office, Philadelphia, Pennsylvania;
- Naval Aviation Depot Operations Center, Patuxent River, Maryland;
- Norfolk NADEP, Norfolk, Virginia; and
- North Island NADEP, San Diego, California.

We reviewed the Norfolk and North Island NADEPS because they were among the largest in both total and component repair revenues during fiscal years 1985 through 1987.

To assess the supportability and reasonableness of component repair prices, we performed tests to determine if required backup documentation was available to support the workload standards used to develop repair prices. If documentation was available, we reviewed the backup for mathematical accuracy and checked whether it agreed with the standard actually used to determine the repair price. We reviewed 356 standards associated with 75 components repaired by Norfolk and North Island. The components were judgmentally selected from lists of high-volume components repaired at each activity in fiscal year 1987.

We made limited tests to determine if workload standards were kept current. We did this by checking the dates selected standards were last reviewed and by determining whether standards were updated after installation of major labor-saving equipment. In addition, we evaluated actual labor-hour expenditures for selected components before and after changes were made in the workload standards to determine whether the changes appeared justified. We also reviewed if the component pricing process had resulted in the NADEPS' charging ASO too many or too few labor hours in comparison with the actual labor hours used.

To assess efforts to contain component repair costs, we reviewed the status of NAVAIR and NADEP initiatives to improve efficiency and reduce costs. We also reviewed the use of performance data at the NADEPS and analyzed changes in reported productivity at the Norfolk and North Island NADEPS for fiscal years 1985 through 1988. Further, we analyzed

the effectiveness of one initiative, the "Dirty Dozen" program, specifically directed at reducing costs in the component repair program. Throughout the review, we identified the internal controls used to ensure reasonable prices and to help provide management oversight.

Our review was made in accordance with generally accepted government auditing standards and was performed between June 1988 and February 1989.

Better Controls Needed to Ensure Reasonable Repair Prices

NAVAIR has not provided sufficient management oversight and controls to ensure that NADEP prices for component repairs are supportable and reasonable. In particular, the NADEPS were not complying with existing requirements to maintain auditable backup documentation for the workload standards used as the basis for component repair pricing. In addition, some standards were not current because the NADEPS had not updated them as changes occurred in the repair processes.

Procedures were not in place requiring the NADEPS to analyze labor hour variances between actual labor hours expended and hours charged ASO. Without such analyses, significant gains or losses on individual component repairs can continue year after year and unreasonable pricing decisions can be made. The NADEPS generate data on actual hours used; however, they do not routinely compare actual hours with existing standards. Thus, the first step required to begin the analysis process (i.e., determining variances) is not taking place.

Variance analyses also could provide NADEPS the ability to identify and adjust price discrepancies to meet the goal of matching component repair revenues and costs. For fiscal years 1985 through 1987, the NADEPS charged ASO \$19.4 million more for component repairs than was justified by the actual labor hours used. Since ASO passes its costs to its customers, the extra charges were paid primarily by the fleet aviation squadrons with appropriated operations and maintenance funds.

Support for Component Pricing Is Inadequate

Navy procedures require that the NADEPS maintain auditable backup support for the engineered workload standards used to determine component repair prices. Such backup normally includes documentation showing when and how the standard was developed for each required repair operation.

We tested 25 Norfolk and 25 North Island components to determine if the required backup was available and if it accurately supported the prices charged ASO. The components tested were judgmentally selected from lists of the top 100 Norfolk and North Island components based on labor hours charged ASO in fiscal year 1987. The lists included only components with prices that were based on engineered standards. In fiscal year 1987, approximately 9,500 different types of components were repaired by the NADEPS.

To ensure the fairness of our sample, 25 additional components were tested at North Island because the NADEP had learned of our sample universe before our visit. The additional 25 components were judgmentally selected from a list of North Island high-volume components that were not in the original lists of top 100 components.

Each component's workload standard is comprised of a number of separate, more detailed standards, called operation standards, which define each step of the repair process. Thus, to review the support for the selected components, we reviewed the backup for individual engineered operation standards. In total, we reviewed 197 operation standards for the 25 components at Norfolk and 83 and 76 operational standards from the original and additional samples, respectively, at North Island.

As shown in table 2.1, we found that the required support for many of the operation standards reviewed either could not be located by NADEP personnel or did not accurately support the standards used to develop the repair prices charged ASO.

**Table 2.1: Support for Component
Operation Standards**

Figures in percent

	Norfolk	North Island	
		First sample	Second sample
Backup accurate	68	59	45
Backup not located	13	18	45
Backup not accurate	19	23	10

In relating the numerous operation standards to the 75 components reviewed, we found that only 7 of Norfolk's 25 components had accurate documentation to support all operation standards used to price the component repairs. The support for one or more of the operation standards for the remaining 18 components either could not be located or did not accurately support the standard used to price the repair. At North Island, only 9 of 25 components in the first sample and 8 of 25 components in the second sample had accurate backup support for all operation standards reviewed.

For example, in fiscal year 1987 Norfolk repaired 129 rail assembly components (NSN-1095-00-630-0762). Although Norfolk charged ASO a workload standard of 162 labor hours for each rail assembly completed, the NADEP actually expended 105 labor hours on each unit. In reviewing

the backup for the component's 162-hour standard, we checked the support for 10 individual engineered operation standards. We found that support for 5 standards was adequate, support for 1 standard could not be located, and support for 4 standards did not accurately support the standard used for pricing. For one operation standard, the support indicated 3.4 labor hours for the operation, but the NADEP used 8.0 labor hours to price the repair. Norfolk charged ASO 7,350 labor hours more than actually used to repair the rail assemblies.

As another example of the support problems, North Island repaired 54 generator components (NSN-6115-00-789-5544) in fiscal year 1987. Although North Island charged ASO a workload standard of 20.6 labor hours for each generator completed, the NADEP actually expended 10.0 labor hours on each unit. In reviewing the backup for the 20.6 hour standard, we attempted to check the support for four individual engineered operation standards. The required backup support could not be located for any of these standards. North Island charged ASO 572 labor hours more than actually used to repair the 54 generators.

In addition to reviewing support for the operation standards, we reviewed the support for adjustments made to the prices charged ASO for repairs. These adjustments provide for NADEP production shop inefficiencies and for repairs started but not completed when items are found to be beyond economical repair. To make the adjustment, the NADEPs normally add a labor-hour allowance to the standard number of labor hours that the repair should require.

Norfolk did not comply with the NAVAIR requirement to develop and retain backup support for these adjustments. For the 25 components we reviewed at Norfolk, these adjustments added an average of 18 percent to the number of hours that the repairs should require. In no case was required backup documentation available to support the mark-up factors used. For the 50 components reviewed at North Island, the adjustments averaged only 3 percent. However, the backup documentation in almost all cases did not accurately support the actual adjustments made to the repair prices. North Island overstated the adjustments in 12 cases, understated the adjustments in 36 cases, and correctly stated the adjustments in 2 cases.

Some Standards Are Not Current

In addition to requiring auditable support for engineered standards, Navy instructions require that the NADEPS keep these standards current. In other words, if a change occurs in the repair process, a NADEP is required to review the standard and make any necessary changes.

To determine if the NADEPS were updating standards, we reviewed some standards for component repairs affected by the installation of new equipment. From fiscal years 1985 through 1988, the NADEPS purchased over \$367 million in new equipment under the Asset Capitalization Program. In a recent report¹ we identified problems in the management of this program; however, we also noted that some of the equipment were producing significant labor savings.

We followed up on three beneficial Asset Capitalization Program equipment projects at Norfolk and North Island and identified five components in which the repair process was changed by the new equipment. We checked six affected operation standards to determine whether they had been revised to reflect the change. In no case was the standard changed to reflect the benefits from the new equipment.

For example, although North Island installed a faster, \$227,000 grinding machine in 1986, North Island engineering technicians had not reviewed or updated the operation standard for grinding components on this machine since 1984. Similarly, Norfolk installed a \$50,000 vertical balance machine in 1987 that resulted in significant labor savings, but Norfolk engineering technicians had not reviewed or updated the standards related to components repaired on the machine since 1982.

The level of effort devoted to keeping standards up to date has declined sharply over the past several years. Before 1984, Navy instructions required NADEP engineering personnel to review the backup support for engineered standards at least every 3 years to ensure that the standards were current and accurate. Although the NADEPS are still required to keep the standards current, NAVAIR deleted the 3-year review requirement in 1984 to give the NADEPS more flexibility in allocating engineering resources. Of 282 engineered operation standards we located and reviewed at Norfolk and North Island, only 2 had been reviewed or updated in the last 3 years. In addition, 73 percent of Norfolk's and 91 percent of North Island's standards had not been reviewed or updated in the last 5 years.

¹Naval Aviation Depots' Asset Capitalization Program Needs Improvement (GAO/NSIAD-88-134, Apr. 28, 1988).

Management Controls Have Declined

Norfolk and North Island officials stated that they recognized that the quality of the standards program had declined. They also stated that the decline was caused by a shift in emphasis from maintaining the workload standards program to performing more methods improvements studies. The purpose of these studies is to review component repair processes in an attempt to identify ways that the repair processes can be made more efficient.

Although NAVAIR officials stated that the need to maintain the workload standards program had not been de-emphasized and that instructions still require that accurate, up-to-date, and auditable standards be used to price repairs, we found that NAVAIR's controls over the standards program to ensure compliance with the instructions have declined. For example, the existing standards instruction requires headquarters personnel to make an annual audit of the quality of each NADEP's entire workload standards program. However, these audits have not been performed since 1982. Also, quarterly reporting to headquarters on the status of each NADEP's standards program was discontinued in August 1987. These reports included information on the number of standards developed and updated and the number of labor hours devoted to these efforts.

Further, in a major organizational realignment in March 1987, many NADEP oversight responsibilities were shifted from the Naval Aviation Logistics Command (now the Naval Aviation Depot Operations Center) to NAVAIR. At NAVAIR, oversight responsibility for the workload standards program was assigned to one person as a collateral duty. We were told that the limited time spent on the standards program by this person was mostly devoted to answering occasional questions from the NADEPs. Prior to the shift in responsibilities, a staff of six or seven people had been involved full-time in overseeing the NADEPs' standards program.

NAVAIR officials stated that the management oversight changes were made in an attempt to reduce headquarters personnel and place greater reliance on the individual NADEPs to ensure compliance with instructions.

Variance Analyses Are Needed

A variance analysis is a basic management tool for comparing planned and actual results. Significant departures from plans often signal the need for management attention and corrective action. As discussed in chapter 3, variance analyses also are a key element in analyzing and promoting improved efficiency of operations.

In the component repair program, a regular comparison of the standard and actual expended labor hours can identify repairs in which a NADEP charged ASO too many or too few labor hours. However, the NADEPs do not routinely identify these variances. Without variance information, the NADEPs cannot investigate if the standards need to be changed so that repair prices are reasonable in view of the actual labor hours required to accomplish the repairs.

For each repair, a NADEP inputs actual hours used for the repair into its data base. This data base also includes the standard labor hour charge on each repair. Because the NADEPs are not required to analyze standard and actual labor hour expenditures on a component basis, they have not routinely analyzed the variance between standard and actual hours.

North Island, however, periodically identified high labor hour repairs and compared actual labor hour expenditures with the standard. If actual hours exceeded standard hours for these repairs, the components were referred to engineering technicians for review to determine if the standard needed to be increased. North Island program officials stated that, because of higher priority work such as method improvement studies, the technicians normally did not review the components referred to them. North Island did not identify and submit for review opposite cases where the standard was greater than the labor hours actually expended.

Recurring Gains and Losses

Without periodic variance analyses, significant gains or losses on individual component repairs can continue year after year, unreasonable pricing decisions can occur, and the overall goal to break even can be more difficult to attain. As a result, ASO and ultimately the fleet aviation squadrons can pay too much or, in some cases, too little for required component repairs.

By reviewing the financial histories of selected components at Norfolk and North Island, a very simple process, we found cases where these NADEPs had incurred a significant gain or loss year after year without taking any action to review the reasons. Because Norfolk and North Island did not make variance analyses, they were not aware of the following cases.

- For every quarter from the beginning of fiscal year 1985 to the end of fiscal year 1987, Norfolk charged ASO an average of 40 percent more labor hours than were actually used to repair 791 arresting gear components (NSN-1560-00-127-0242). Although the average quarterly gain for

this component was 726 labor hours, action was not taken to review and reduce the standard charged for the repair.

- North Island consistently made a significant gain on a rotor head component (NSN-1615-00-148-9198) repaired in fiscal years 1985 through 1987. Quarterly gains ranged from 253 hours to 5,272 hours and averaged 2,019 hours. North Island engineering technicians had not reviewed any of the operation standards we examined for this component since August 1984.
- For a harness component (NSN-1430-01-170-8309), North Island consistently charged ASO less than the actual number of hours required to make the repairs. From the beginning of fiscal year 1985 to the end of fiscal year 1987, the activity charged 366 hours less than was actually expended to repair 37 of the components. North Island incurred a loss in 10 of the 11 quarters these components were repaired.

Unreasonable Pricing Decisions

The lack of variance analyses contributed to many component pricing decisions that appeared unreasonable and unjustified. We identified cases where a NADEP had increased the repair price for a component even though the standard labor hours required for the repair had declined and a gain was already being made on the repair.

For example, in fiscal year 1985 the standard repair hours for a fuel control component (NSN-2915-01-135-8423) repaired by Norfolk was 318 hours. To allow for production inefficiencies and repairs started but not completed, Norfolk charged ASO 401 hours for each repair. For 35 components repaired, Norfolk actually expended 121 hours per unit, or 9,800 fewer hours than it charged ASO. In fiscal year 1986, Norfolk decreased the standard repair hours for the component to 308 hours but increased the amount charged ASO to 415 hours. Officials could not explain the basis for this decision. During fiscal year 1986, Norfolk experienced a gain of 16,298 hours on the component. Multiplied by the activity's fiscal year 1986 industrial fund rate, this gain cost ASO an extra \$1.6 million for the repairs.

In another case, North Island charged ASO 19.8 hours to repair a gyroscope (NSN-6615-00-961-1691) in fiscal year 1985. The activity charged ASO 531 hours more than it actually expended to repair 523 of the gyroscopes. In fiscal year 1986, North Island increased the repair charge to 20.2 hours. During fiscal year 1986, North Island experienced a gain of 993 hours on the component and in fiscal year 1987 made a gain of 880 hours. Multiplied by the activity's fiscal years 1986 and 1987 industrial fund rates, these gains cost ASO an extra \$172,000 for the repairs.

For a different gyroscope (NSN-6615-00-159-2298), Norfolk experienced a gain of 2,012 hours while repairing 555 units in fiscal year 1986. The following year Norfolk increased the labor hours charged ASO from 47.2 to 54.2 hours. The rationale for this decision was not available. The fiscal year 1987 gain on repairing 590 gyroscopes was 3,991 hours, costing ASO an extra \$348,000.

Break-Even Goals Not Met

In addition to helping ensure reasonable component repair prices, variance analyses also could help the NADEPS meet their goal to break even. The prior examples illustrate cases where variance analyses could have signaled the need for management attention to determine if the standard labor hours charged ASO needed revision to minimize the gain or loss. Overall, the NADEPS have not been successful in achieving a break-even status in the component repair program. Between fiscal years 1985 and 1987, the NADEPS collectively charged ASO about 224,000 more labor hours than were actually expended. Multiplying this labor hour overcharge by the appropriate industrial fund rates shows that this factor resulted in the NADEPS charging ASO about \$19.4 million more than if they had charged only for the actual labor hours used.

Conclusions

NAVAIR has not provided sufficient controls to ensure that component repair prices are supportable and reasonable. In many cases, the NADEPS were not complying with existing requirements to maintain auditable backup support for engineered workload standards and to update standards when changes occurred in the repair processes. NAVAIR's controls over the workload standards program have declined. Periodic status reports are not being obtained and on-site audits are not being made. Also, procedures were not in place requiring identification and analysis of the variances between labor hours charged ASO and the number actually expended for repairs. Without identifying and analyzing repair standards that may need adjustment because of actual labor hour expenditures, the NADEPS cannot develop reasonable repair prices.

Recommendations

We recommend that the Secretary of the Navy instruct the Commander, Naval Air Systems Command, to direct the NADEPS to comply with requirements that component repair prices be well-supported with up-to-date, auditable documentation. To verify compliance, we recommend that the Command make on-site audits and obtain quarterly status reports on NADEP efforts to maintain the standards program.

To ensure that the NADEPS identify and analyze variances between standard and actual labor hours for individual repairs, we recommend that the Commander direct the NADEPS to develop quarterly reports identifying variances, analyze the reasons for these variances, and make appropriate adjustments to the standards.

Agency Comments

DOD agreed that management of the component repair program needs improvement. According to DOD, the Navy is developing a revised workload standards program that will address our concerns. Management controls built into the revised program will include periodic reporting and on-site reviews. The revised program is expected to be implemented by October 1989.

The Navy also expects to implement a variance analysis program by October 1989. Under this program, a fixed number of components with large variances between standard and actual labor hours will be reviewed quarterly by each NADEP. An engineered workload standard *will be developed for each component reviewed.*

Greater Management Attention Needed to Improve Efficiency

NAVAIR has several major initiatives underway to improve NADEP efficiency and contain costs in all repair programs. However, reported performance data for fiscal years 1985 through 1988 indicate that these efforts have achieved little success in the component repair program. Over this period, reported productivity in the component repair program actually declined 13 percent. In addition, although required by instructions, the NADEPs were no longer using the workload standards program to set performance improvement goals and to monitor progress toward these goals. The one cost initiative directed solely at component repairs, the "Dirty Dozen" program, contained some design problems that limited the program's success.

Improvement Efforts Have Achieved Little Success

NAVAIR has initiated several efforts to improve NADEP efficiency and contain costs in all repair programs. One such initiative is the Naval Industrial Improvement Program. The Secretary of the Navy began this program in 1986 by requiring a comprehensive management evaluation of the Navy's industrial fund activities. The NADEP portion of the evaluation resulted in over 100 recommendations for improving operations across-the-board. Efforts are ongoing to implement many of these recommendations.

Another major initiative involves the introduction of competition for NADEP workload. Under this program, the NADEPs bid against private sector contractors for selected aviation overhaul work. The program's primary goal is to reduce Navy maintenance costs through increased competition. Thus far, F-14 and P-3C aircraft overhaul work has been included in the competition program. According to NAVAIR officials, there are no plans to include component repair workload in this program.

An additional initiative is NAVAIR's participation in a governmentwide program to achieve a 20-percent productivity improvement by fiscal year 1992. Established in 1986 by Executive Order 12552, the objective of this program is to improve the quality, timeliness, and efficiency of services provided by the government. Progress toward this goal is tracked and reported annually to the Office of Management and Budget.

NADEP performance statistics indicate that the NADEPs achieved an overall productivity improvement between fiscal years 1985 and 1988. However, the statistics also indicate that the improvement was limited to the airframe and engine repair programs. Productivity in the component repair program actually declined during this time period.

To illustrate, according to information reported to the Office of Management and Budget under the productivity improvement program, the NADEPS achieved an overall productivity gain of 3.4 percent from fiscal years 1985 to 1988. However, as shown in table 3.1, significant differences existed in the productivity changes among the major repair programs.

**Table 3.1: Productivity Changes From
Fiscal Years 1985 to 1988**

Program	Change
Airframe repairs	3.9 percent increase
Engine repairs	12.8 percent increase
Component repairs	12.9 percent decrease
All repairs	3.4 percent increase

Productivity is calculated by dividing actual labor, material, and overhead costs by the total standard hours required for the workload completed for each repair program. The analysis is rather simple and does not identify the causes for productivity changes. However, we believe that differences in the management attention provided to the component program compared to the airframe and engine repair programs could have contributed to the disparity in the productivity changes. For example, NAVAIR officials stated that even though the component repair program is the largest repair program based on revenues, the program has less visibility than the airframe and engine repair programs because the latter programs have higher unit repair costs. As a result, the component repair program often receives less attention. The officials further stated that more headquarters analyses, such as comparing actual and planned costs, are performed on airframe and engine repairs than on component repairs. Consequently, potential performance problems in the airframe and engine programs usually are identified and dealt with earlier in comparison to the component program.

Greater Use of Performance Information Is Needed

As a tool to improving NADEP efficiency, DOD and Navy instructions call for the use of the overall workload standards program to establish efficiency goals, measure overall performance against the goals, and investigate and correct any barriers to achieving the goals. However, the NADEPS have not used the program to meet these objectives for several years. Officials at both Norfolk and North Island stated that the workload standards program is no longer used to measure and enhance NADEP productivity.

For example, except for the previously discussed governmentwide productivity improvement initiative, neither NADEP that we visited nor NAVAIR had established specific goals for improving efficiency or reducing costs in the component program. Further, at North Island, we were told that the group responsible for identifying and investigating performance problems no longer performs this task because the quality of the information from the standards program was unreliable. As discussed in chapter 2, standards were not accurate and up-to-date. At Norfolk, the organization that had similar responsibilities was abolished in February 1988 in an effort to reduce indirect personnel. As a result, no group was monitoring production efficiency in the component program at Norfolk.

The Dirty Dozen Cost Initiative Can Be More Successful

In fiscal year 1986, the NADEPS began a cost reduction initiative directed solely at the component repair program. The objective of this program, called the Dirty Dozen program because 12 components were reviewed simultaneously, was to reduce large differences in the workload standards used by two NADEPS for repairing the same component.

While differences between the standards used by two NADEPS for the same repair were reviewed, the NADEPS did not always compare the standards with the actual labor hours. As a result, even if two NADEPS had used the same workload standard for a particular component, both activities could have charged ASO significantly more labor hours than were actually required to perform the repairs.

Once a component was selected for inclusion in the Dirty Dozen program, the NADEP using the higher workload standard for the repair was required to review its repair process in relation to the competitor's process. The goal of the review was to identify ways that the higher NADEP could improve its repair process and, therefore, could reduce the workload standard and the price charged ASO. If the NADEP could not reduce its standard to within 10 percent of the competitor's standard, NAVAIR could shift all workload for the component to the NADEP using the lower standard. Analysis of actual labor hours used was not always performed for components included in the program.

In almost all cases, the NADEP that used the higher workload standard reduced its standard. From the program's inception to the end of fiscal year 1988, 86 components were reviewed under the Dirty Dozen program. According to the Navy, the lower prices for these components have saved ASO over \$8.5 million.

For example, the Alameda and Jacksonville NADEPS both repaired a particular fuel tank component. At the beginning of fiscal year 1988, Alameda's workload standard for the repair was 45.1 hours and Jacksonville's was 29.1 hours. After a review of the item, Alameda lowered its standard to 31.1 hours, a decrease of 31 percent. According to the Navy, this change resulted in ASO paying about \$373,000 less for the repair of this component at Alameda for the balance of fiscal year 1988.

In another case, the workload standard for a manifold component repaired by the North Island NADEP was 14.7 hours. The workload standard for the same component at the Cherry Point NADEP was only 4.5 hours. After reviewing its repair process, North Island reduced the standard to 4.9 hours, a reduction of 67 percent. According to the Navy, the lower standard and resulting lower price saved ASO about \$56,000 during fiscal year 1987.

The Dirty Dozen program is a step in the right direction toward improving efficiency in component repairs. By reducing some workload standards through improved repair processes, the program has produced savings. However, the program was designed only for components repaired by more than one NADEP. Yet, the majority of the Navy's aviation components are repaired at only one NADEP and there was no special cost containment effort or management attention directed at single-sited components. Under these circumstances, the NADEPS could compensate for reduced revenues from dual-sited items by increasing the standards, and thus the prices, for single-sited components.

Officials at both Norfolk and North Island stated that, to avoid losing workload, they would sometimes reduce the workload standard for a Dirty Dozen component to below the number of hours actually needed to perform the work. They stated that losses for these items could be recovered by increasing standards used for other components. Norfolk representatives stated that revenue losses from dual-sited components were routinely compensated for by charging more for single-sited components.

To determine if there was evidence that the Dirty Dozen program had resulted in shifting revenue from dual-sited to single-sited components, we compared the number of labor hours charged ASO for the repair of certain components with the number of hours actually used. The comparison included Norfolk's and North Island's top 100 single-sited and top 100 dual-sited components based on labor hours charged ASO in fiscal year 1987. The results of our comparison were inconclusive. Norfolk

charged an average of 5.2 hours more than it actually used for each of the single-sited components completed in fiscal year 1987. For dual-sited components, Norfolk charged ASO an average of 0.9 hours more than it used for each component repaired. At North Island the statistics did not show evidence that revenues had been shifted from dual-sited to single-sited components.

Conclusions

Developing supportable and reasonable prices for component repairs should ensure that ASO pays a more equitable amount for actual work completed. But in an industrial fund activity, such as a NADEP, a key to significant savings is improved efficiency and reduced operating costs. Since increased efficiency reduces the unit cost of repairs, customer charges can be reduced for completed work. If done properly, reduced charges to the customers should ultimately result in reduced appropriations to accomplish the Navy's component repair requirement. We believe that additional management attention is needed to improve the cost effectiveness of the NADEPS' component repair program.

Even with NAVAIR's initiatives to improve NADEP efficiency and contain costs in all repair programs, reported productivity in the component repair program has declined over the past several years. We believe management needs to focus attention on identifying and correcting the causes of the productivity decline. In addition, controls are needed to ensure NADEP compliance with instructions requiring that the workload standards program be used to set performance improvement goals and to monitor progress towards these goals. A key element in improving the efficiency of the component repair program is to maintain accurate, up-to-date workload standards.

We believe the Dirty Dozen program could accomplish more if labor hour variance analyses were performed. Such analyses, as we have recommended, also would limit the potential for shifting revenues from dual-sited to single-sited components.

Recommendations

We recommend that the Secretary of the Navy direct the Commander, Naval Air Systems Command, to

- identify the causes of the reported productivity decline in the component repair program and take appropriate action to improve productivity and

- require the NADEPS to reestablish and track performance goals as a means to improve efficiency.

Agency Comments

DOD stated that the Navy recognizes the need to apply enhanced management action to the component repair program and will take appropriate steps to improve productivity and efficiency. The specific details of this enhanced management action will be defined by the second quarter of fiscal year 1990.

DOD also stated that NAVAIR has directed the NADEPS to implement an improved performance measurement system. Finalization of approved, meaningful performance measurements is targeted for completion by the end of fiscal year 1989, with implementation starting in the next year.

Comments From the Department of Defense



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ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D C 20301-8000

JUN 6 1989

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

Dear Mr. Conahan:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) Draft Report, "NAVY MAINTENANCE: Aviation Component Repair Program Needs Greater Management Attention," dated March 30, 1989 (GAO Code 394272, OSD Case 7949). The Department generally concurs with the draft GAO findings and recommendations.

Systematic conformance with the Navy's "Performance Standards Program" has gradually declined at the Naval Aviation Depots, as emphasis on the implementation of Total Quality Management has increased. The Navy recognizes that the current Performance Standards Program is no longer consistent with the Total Quality Management principles and, accordingly, has formed a subcommittee to revise the Performance Standards Program to reflect a progressive philosophy towards the use of labor standards and human resources. The initial proposal of the Standards Program Subcommittee is expected to be ready for review by July 1989, with implementation to follow by the end of October 1989.

The Navy will rely upon variance analysis to ensure that the labor standards associated with component repair are accurate, supportable, and up to date. A fixed number of line items will be reviewed per quarter by each depot. An engineered standard will be developed for each item reviewed. This effort should be fully implemented by October 1989.

The internal control issues referenced in the GAO Draft Report are included in the Navy's 5-year management control plan, with a management control review planned in FY 1991.

The detailed DoD comments on each finding and recommendation are provided in the enclosure. The DoD appreciates the opportunity to comment on the draft report.

Sincerely,

A handwritten signature in dark ink, appearing to read "Jack Katzen".

Jack Katzen

Enclosure

GAO DRAFT REPORT - DATED MARCH 29, 1989
(GAO CODE 394272) OSD CASE 7949

"NAVY MAINTENANCE: AVIATION COMPONENT REPAIR PROGRAM NEEDS GREATER
MANAGEMENT ATTENTION"

DEPARTMENT OF DEFENSE COMMENTS

* * * * *

FINDINGS

- **FINDING A: Determining Component Repair Prices.** The GAO reported that, in FY 1988, the six Naval Aviation Depots overhauled almost 200,000 components as part of the component repair program. The GAO observed that the component repair program has been the largest naval aviation depot program, accounting for revenues of about \$601 million in FY 1988. The GAO noted that the naval aviation depots are industrial fund activities operating under the Naval Air Systems Command, with the primary customer for the component repair program being the Navy Aviation Supply Office. The GAO reported that the Aviation Supply Office determines repair requirements for aviation components on the basis of fleet needs, then contracts with the naval aviation depots, or with commercial aircraft maintenance contractors to perform the required repairs. The GAO further reported that the Aviation Supply Office is reimbursed for its costs by selling the repaired items to fleet users, primarily the Navy aviation squadrons, who request annual appropriations for component repairs as part of the Navy flying hour program. The GAO found each naval aviation depot determines the price it charges for component repairs by multiplying the labor hours required for a repair (as determined by a work load standards program) by the hourly Navy Industrial Fund rate (to cover costs associated with material overhead and other naval aviation depot operations) by the quantity repaired. The GAO observed that allowances are usually added for production shop inefficiencies and for repairs started but not completed. The GAO concluded that the pricing process should result in the naval aviation depots being reimbursed at a level closely approximating the actual cost of repairs.

The GAO also found that the Aviation Supply Office generally accepts the price charged and pays the naval aviation depot that amount for each component repaired. The GAO further found, however, that for those components repaired by private contractors, the Aviation Supply Office uses competitive bidding to determine the price. (pp. 7-9/GAO Draft Report)

Enclosure

Now on pp. 8 and 9.

DOD RESPONSE: Concur.

- **FINDING B: Support For Component Pricing Is Inadequate.** The GAO reported that it tested components at the North Island and Norfolk Naval Aviation Depots to determine (1) if the required backup was available to support the work load labor standards used in the computation of repair prices and (2) if the backup supported the price charged to the Aviation Supply Office. The GAO noted that each component workload standard is comprised of separate, more detailed operation standards, which were also reviewed. The GAO found that the required support for many of the operation standards it reviewed either could not be located by naval aviation depot personnel, or did not accurately support the standard used to develop the repair price charged to the Aviation Supply Office. The GAO further found that:
 - only seven of 25 Norfolk components had accurate documentation to support all operation standards used to price the component repairs;
 - support for one or more of the operation standards for the remaining 18 components either could not be located or did not accurately support the standard used to price the repair;
 - at North Island, only nine of 25 components in the original sample and eight of 25 components in the additional sample had accurate backup support for the operation standards reviewed;
 - although the Norfolk Naval Aviation Depot charged the Aviation Supply Office for a workload standard of 162 labor hours for each of 129 rail assemblies completed in FY 1987, it actually expended only 105 labor hours on each unit;
 - in reviewing ten supporting engineered operation standards, five were adequate, one could not be located, and four did not accurately support the standard used for pricing;
 - the Norfolk Naval Aviation Depot charged the Aviation Supply Office for 7,350 labor hours more than it used to repair the rail assemblies;
 - in FY 1987, North Island charged the Aviation Supply Office 20.6 labor hours to repair 54 generator components, when it actually expended 10.0 labor hours on each unit;

- no backup support could be located for any of four individual engineered operation standards reviewed; and
- North Island charged the Aviation Supply for 572 labor hours more than it used to repair the 54 generators.

The GAO also reported that, in reviewing the support for the adjustments made to the prices charged to the Aviation Supply Office for repairs, Norfolk did not comply with the Naval Air Systems Command requirement to develop and retain backup support for the adjustment. The GAO noted that, for the 25 components it reviewed at Norfolk, (1) the adjustments added an average of 18 percent to the number of hours that the repair should required and (2) in no case was required backup documentation available to support the markup factors used. The GAO noted that, on the other hand, for the 50 components reviewed at North Island, the actual adjustments averaged only 3 percent; however, the backup documentation in almost all cases did not accurately support the actual adjustments made to the repair prices. The GAO reported that North Island overstated the adjustment in 12 cases, understated the adjustment in 36 cases, and correctly stated the adjustment in two cases. The GAO concluded that the Naval Air Systems Command has not provided sufficient management oversight and controls to ensure that naval aviation depot prices for component repairs are supportable and reasonable. The GAO further concluded that the depots are not complying with existing requirements to maintain auditable backup documentation for the labor standards used as the basis for component repair pricing. (pp. 13-17/GAO Draft Report)

DoD RESPONSE: Concur. The Department agrees that management of the component program needs improvement.

- **FINDING C: Some Standards Are Not Current.** The GAO reported that, in order to determine whether the naval aviation depots were updating standards, it reviewed some standards for component repairs affected by the installation of new equipment. The GAO found that in no case was the labor standard changed to reflect the benefits from the new equipment. The GAO reported, for example, that although North Island installed a faster, \$227,000 grinding machine in 1986, North Island engineering technicians had not reviewed or updated the labor operation standard for grinding components since 1984. The GAO also reported Norfolk installed a \$50,000 vertical balance machine in 1987 that resulted in significant labor savings, but depot engineering technicians had not reviewed or updated the standards related to components repaired on the machine since 1982. The GAO concluded

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Now on pp. 12 to 14.

Now on p. 15.

that the level of effort devoted to keeping standards up to date had declined sharply over the past several years. The GAO noted that, in 1984, in order to give the depots more flexibility in allocating engineering resources, the Naval Air Systems Command deleted the requirement that, at least every 3 years, naval aviation depot engineering personnel review the backup support for engineered standards to ensure the standards were current and accurate.

Based on a review of 282 engineered operation standards, the GAO concluded that (1) only two of the standards had been reviewed or updated in the last 3 years and (2) 73 percent of the standards at Norfolk and 91 percent at North Island had not been reviewed or updated in the last 5 years. (pp. 18-19/GAO Draft Report)

DoD RESPONSE: Concur. The Performance Standards Program has proven, over time, to be overly burdensome in terms of controlling work load standards. The Naval Air Systems Command is developing a revised Performance Standards Program. A standards program subcommittee was formed in January 1989 to establish objectives and dynamic program changes to revise the Performance Standards Program with the advent of Total Quality Management as a means of institutionalizing productivity gains. Consideration will now be given to incorporation of the various statistical control techniques as an intrinsic part of the Performance Standards Program. The initial program proposal should be ready for review by July 1989 with implementation to occur by October 1989.

- **FINDING D: Management Controls Have Declined.** The GAO reported that Norfolk and North Island officials recognize that the quality of the standards program had declined, due to a shift in emphasis from maintaining the labor standards programs to performing more methods improvements studies. The GAO found that Naval Air Systems Command controls over the labor standards program, to ensure compliance with the instructions, have declined. The GAO noted that (1) while existing standards instruction requires headquarters personnel to perform an annual audit of the quality of each naval aviation depot's entire labor standards program, the audits have not been performed since 1982 and (2) quarterly reporting to headquarters on the status of each naval aviation depot standards program was discontinued in August 1987.

The GAO also reported that, after a major organizational realignment in March 1987, many naval aviation depot oversight responsibilities were shifted from the Naval Aviation Logistics Command (now the Naval Aviation Depot Operations Center) to the

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Now on pp. 16 and 19

Naval Air Systems Command, where oversight responsibility for the labor standards program was assigned to one person as a collateral duty. The GAO observed that, prior to the shift in responsibilities, a staff of six or seven people had been involved full time in overseeing the depot standards program. The GAO reported that, according to Naval Air Systems Command officials, the management oversight changes were made in an attempt to reduce headquarters personnel and place greater reliance on the individual naval aviation depots to ensure compliance with instructions. The GAO concluded that the Naval Air Systems Command has not provided sufficient controls to ensure that component repair prices are supportable and reasonable. The GAO further concluded that, in many cases, the naval aviation depots were not complying with existing requirements to maintain auditable backup support for engineered labor standards and to update standards when changes occurred in the repair processes. The GAO also reported the Naval Air System Command controls over the labor standard program have declined, periodic status reports are not being obtained, and on-site audits are not being made. (pp. 21-22, pp. 26-27/GAO Draft Report)

DoD RESPONSE: Concur.

- **FINDING E: Variance Analyses Are Needed.** The GAO reported that, because they are not required to analyze standard and actual labor hour expenditures on a component basis, the naval aviation depots do not routinely identify variances in the component repair program between standard and actual expended labor hours. The GAO observed that, without variance information, the depots cannot investigate whether the standards need to be changed so that repair prices are reasonable in view of the actual labor hours required to accomplish the repairs. The GAO did note, however, that North Island periodically identified high labor hour repairs and compared actual labor hour expenditures with the standard, referring differences to engineering technicians for review. The GAO found, however, that (1) due to other priorities, the technicians normally did not review the components referred to them and (2) North Island did not identify, or submit for review, cases where the standard was greater than the labor hours actually expended. The GAO found cases where the depots incurred a significant gain or loss, year after year, without taking any action to review the reasons. The GAO reported, for example, that:

- for every quarter from the beginning of FY 1985 to the end of FY 1987, Norfolk charged the Aviation Supply Office an

average of 40 percent more labor hours than were actually used to repair 791 arresting gear components and, although the average quarterly gain for this component was 726 labor hours, action was not taken to review and reduce the standard charged for the repairs;

- North Island consistently made a significant gain on a rotor head component repaired in FY 1985 through FY 1987, with quarterly gains ranging from 5,272 hours to 253 hours and averaging 2,019 hours (the GAO noted that North Island engineering technicians had not reviewed any of the operation standards for this component since August 1984); and
- from the beginning of FY 1985 to the end of FY 1987, North Island charged 366 hours less than was actually expended to repair 37 harness components and, as a result, incurred a loss in ten of the 11 quarters during which the harness component was repaired.

The GAO concluded that, without periodic variance analyses, (1) significant gains or losses on individual component repairs can continue year after year, (2) unreasonable pricing decisions can occur, and (3) the overall goal to break even can be more difficult to attain. The GAO further concluded that, due to the lack of periodic variance analyses, the Aviation Supply Office (and ultimately the fleet aviation squadrons) can pay too much, or in some cases too little, for required component repairs. (pp. 21-24/GAO Draft Report)

DoD RESPONSE: Concur. In an effort to ensure that the labor standards for the component program are accurate, supportable, and up to date, the Navy is implementing a Variance Analysis Program. This program will review the top over/under expended items by depot. A fixed number of line items will be reviewed per quarter by each depot. An Engineered Standard (Class A) will be developed for each item reviewed. The candidates will be provided to the depots by the Naval Aviation Depot Operations Center using the Master Component Rework Control II data base (line item accounting). The program will be fully implemented by October 1989.

- **FINDING F: Unreasonable Pricing Decisions.** The GAO reported the lack of variance analyses contributed to many component pricing decisions that appeared unreasonable and unjustified. The GAO found that, in some cases, the naval aviation depots increased the repair price for a component even though the standard labor

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hours required for the repair had declined and a gain was already being made on the repair.

- The GAO reported, for example, that in FY 1985, Norfolk charged the Aviation Supply Office 401 hours per unit for repair of 35 fuel control components, when Norfolk actually expended 121 hours per unit, or 9,800 fewer hours than it charged. The GAO further reported that, in FY 1986, Norfolk decreased the standard repair hours for the component to 308, but increased the hours charged to the Aviation Supply Office to 415. The GAO noted that, as a result, Norfolk experienced a gain of 16,298 on the component, which if multiplied by the activity industrial fund rate, translates to an extra cost to the Aviation Supply Office of \$1.6 million.
- The GAO reported another example where, in FY 1985, North Island charged the Aviation Supply Office 19.8 hours for the repair of a gyroscope, which was 531 hours more than it actually expended to repair the 523 gyroscopes, and then in FY 1986, increased the repair charge to 20.2 hours. The GAO further reported, that during 1986, North Island experienced a gain of 993 hours on the component and in FY 1987 made a gain of 880 hours, which together cost the Aviation Supply Office an extra \$172,000 for the repairs.
- Finally, the GAO reported that for a different gyroscope, Norfolk experienced a gain of 2,012 hours while repairing 555 units in FY 1986, and then increased the labor hours charged to the Aviation Supply Command from 47.2 to 54.2, the next year. The GAO noted that the FY 1987 gain on repairing the 590 gyroscopes was 3,991 hours, costing the Aviation Supply Office an extra \$348,000.

The GAO concluded that these examples illustrate cases where variance analyses could have signaled the need for management attention to determine whether the standard labor hours charged to the Aviation Supply Office needed revision to minimize the gain or loss. The GAO further concluded that, without identifying and analyzing repair standards that may need adjustments in view of actual labor hour expenditures, the naval aviation depots cannot develop reasonable repair prices. (pp. 25-27/GAO Draft Report)

DOD RESPONSE: Concur.

- **FINDING G: Break-Even Goals Not Met.** The GAO reported that, overall, the naval aviation depots have not been successful in

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Now on pp. 18 and 19.

Now on p. 19.

achieving a break-even status in the component repair program. The GAO observed that, between FY 1985 and FY 1987, the depots collectively charged the Aviation Supply Office for about 224,000 more labor hours than were actually expended, which (if multiplied by the appropriate industrial fund rates) translates to charging the Aviation Supply Office about \$19.4 million more than if the depots had charged only for the actual labor hours used. The GAO concluded that, in addition to helping ensure reasonable component repair prices, the variance analyses could also help the naval aviation depots meet their goal to break even. (pp. 26-27/GAO Draft Report)

DoD RESPONSE: Concur.

• **FINDING B: Improvement Efforts Have Achieved Little Success.**

The GAO reported that the Naval Air Systems Command has several major initiatives underway to improve naval aviation depot efficiency and contain costs in all repair programs, including:

- implementation of the Naval Industrial Improvement Program in 1986, which was designed to evaluate comprehensively Navy industrial fund activities, and which has resulted in over 100 recommendations to improve depot operations across the board;
- the introduction of competition into the naval aviation depot process, where the depot competes against private sector contractors for selected aviation overhaul work, with the primary objective of reducing Navy maintenance through increased competition; and
- the Naval Air Systems Command participation in a Government-wide program to achieve a 20 percent productivity improvement by FY 1992 (as a result of Executive Order 12552)--with a program objective of improving the quality, timeliness, and efficiency of Government services and with progress tracked and reported annually to the Office of Management and Budget.

The GAO found that, between FY 1985 and FY 1988, while performance statistics indicate that the naval aviation depots achieved an overall productivity improvement of 3.4 percent, the improvement was limited to the airframe and engine repair programs--productivity in the component repair program actually declined by 12.9 percent. The GAO concluded that the disparity in the management attention provided to the component program versus the airframe and engine repair programs could have contributed to the disparity in the productivity changes. The

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GAO observed that, even though the component repair program is the largest, based on revenues, the airframe and engine repair programs have higher visibility because they have higher unit repair costs and, therefore, more headquarters analyses are performed on airframe and engine repairs, which result in problems being identified and dealt with earlier. In summary, the GAO concluded that management needs to focus attention on identifying and correcting the causes of productivity declines in the component repair program. (pp. 28-31/GAO Draft Report)

- **DoD RESPONSE:** Concur.
- **FINDING I: Greater Use of Performance Information Is Needed.** The GAO found that the naval aviation depots have not used the labor standards program to establish efficiency goals, measure performance, or investigate and correct barriers to achieving the goals. (The GAO noted that officials at both the Norfolk and North Island Depots indicated the labor standards program is no longer used to measure and enhance productivity.) The GAO also found that neither the depots it visited nor the Naval Air Systems Command has established specific goals for improving efficiency or reducing cost in the component program. The GAO reported that, at North Island, the group responsible for identifying and investigating performance problems no longer performs this task because the quality of the information from the standards program was unreliable. The GAO further reported that the organization at the Norfolk Depot (which had similar responsibilities) was abolished in February 1988, in an effort to reduce indirect personnel, leaving no group monitoring efficiency in the component program. The GAO concluded that controls are needed to ensure naval aviation depot compliance with instructions that the labor standards program be used to set performance improvement goals and to monitor progress. The GAO further concluded that maintaining accurate, up-to-date labor standards is a key to improving the efficiency of the component repair program. (pp. 31-31/GAO Draft Report)

DoD RESPONSE: Concur. An improved performance measurement system has been directed by the Naval Air Systems Command to be implemented by the naval aviation depots. This management direction was provided at the February 1989 Fleet Readiness Support Meeting. Finalization of approved, meaningful performance measurements is targeted for completion by the end of FY 1989, with implementation commencing in FY 1990.

- **FINDING J: The Dirty Dozen Cost Initiative Could Be More Successful.** The GAO reported that, in FY 1986, the naval aviation depots began the Dirty Dozen Program (an initiative to

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reduce cost), which was directed solely at the component repair program. The GAO found that, from the program inception to the end of FY 1988, 86 components were reviewed and the resulting lower prices have saved the Aviation Supply Office over \$8.5 million. The GAO cited an example of a fuel tank component repair, where a review of the item led the Alameda Depot to lower its standard by 31 percent, saving about \$373,000 in FY 1988. The GAO cited another example where a comparison of the workload standard between the Cherry Point and North Island Depots led to a 67 percent reduction in the North Island standard, saving about \$56,000 during FY 1987. The GAO concluded that the Dirty Dozen Program is a step in the right direction--one which has reduced some workload standards through improved repair processes and produced program savings. The GAO further concluded, however, that because the Dirty Dozen Program was designed only for components repaired by more than one depot, the naval aviation depots could compensate for reduced revenues from dual-sited items by increasing the standards and prices charged for single-sited components. The GAO found that (1) to avoid losing workload, the depots reduced standards on one Dirty Dozen component to below the number of hours actually needed to perform the work and then recovered the losses by increasing standards charged for other components and (2) revenue losses from dual-sited components were routinely compensated for by charging more for single-sited components. (The GAO reported that its attempt to determine if the program had resulted in a revenue shift from dual to single-sited components was inconclusive.) The GAO concluded that reduced charges to customers should ultimately reduce the appropriations to accomplish the Navy component repair requirement. The GAO further concluded that the Dirty Dozen Program could accomplish more if labor hour variance analyses were performed and if the potential for shifting revenues from dual-sited to single-sited components also was limited. (pp. 32-36/GAO Draft Report)

DoD RESPONSE: Concur. It is Navy policy, and that of the naval aviation depots, that work load standards must reflect the actual cost of producing the items. If work load standards appear too low or too high, based on actual production experience, Naval Air System Command policy is to adjust the work load standard accordingly. The Navy will conduct a review during the first quarter of FY 1990 to assess the extent of compliance with this policy at the depots, and take appropriate action to ensure full compliance.

With respect to prices for dual-sited versus single-sited items, it is Naval Air Systems Command policy to price items in accordance with production costs. It is not policy to compensate

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for revenue losses by routinely charging more than required for other items. It must be noted that component repair prices are based on average costs. With a work load base of approximately 250,000 components per year, there will always be instances in which some will be below average and some above, which affects production costs and eventual prices. However, with the implementation of the Variance Analysis Program, the variances between costs and prices for dual-sited and single-sited items will be greatly reduced.

* * * * *

RECOMMENDATIONS

- **RECOMMENDATION 1:** The GAO recommended that the Secretary of the Navy direct the Commander, Naval Air Systems Command, to direct the naval aviation depots to comply with requirements that component repair prices be well-supported with up-to-date, auditable documentation. (p. 27/GAO Draft Report)

DOD RESPONSE: Concur. The Navy is developing a revised Performance Standards Program. To accomplish this initiative, a standards program subcommittee was formed in January 1989 to establish objectives and develop dynamic program changes to revise the Performance Standards Program. The revised Performance Standards Program, combined with the Navy implementation of a Total Quality Management program, will provide a means of institutionalizing productivity gains. Considerations will also be given to incorporation of various statistical control techniques as an intrinsic part of the Performance Standards Program. Concerns raised by the GAO with regard to standards will be addressed in the revised Performance Standards Program. The initial program proposal should be ready for review by July 1989, with implementation to occur by October 1989.

- **RECOMMENDATION 2:** The GAO recommended that, in order to verify compliance, the Naval Air Systems Command make on-site audits and obtain quarterly status reports on naval aviation depot efforts to maintain the standards program. (p. 27/GAO Draft Report)

DOD RESPONSE: Concur. The Naval Air Systems Command, in the revised Performance Standards Program, will ensure that management controls are in place to verify compliance. Periodic reporting and on-site reviews will be built into the program. The details will be provided in the revised Performance Standards Program.

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Now on p. 20.

- **RECOMMENDATION 3:** The GAO recommended that, in order to ensure that the naval aviation depots identify and analyze variances between standard and actual labor hours for individual repairs, the Commander, Naval Air Systems Command, instruct the naval aviation depots (1) to develop quarterly reports identifying variances, (2) to analyze the reasons for the variances, and (3) to make appropriate adjustments to the standards. (p. 27/GAO Draft Report)

DoD RESPONSE: Concur. The Variance Analysis Program, to be implemented by the Navy by October 1989, will ensure that appropriate adjustments to the standards are enforced.

Now on p. 25

- **RECOMMENDATION 4:** The GAO recommended that the Secretary of the Navy direct the Commander, Naval Air Systems Command, to identify the cause of the reported productivity decline in the component repair program and take appropriate action to improve productivity. (p. 36/GAO Draft Report)

DoD RESPONSE: Concur. The Navy has recognized fully the need to apply enhanced management action to the component program and will take appropriate steps to improve productivity and efficiency. The Navy will review the reported productivity decline in the component repair program and, by the second quarter of FY 1990, prepare and implement an action plan to improve productivity.

Now on p. 26.

- **RECOMMENDATION 5:** The GAO recommended that the Secretary of the Navy direct the Commander, Naval Air Systems Command, to require that the naval aviation depots reestablish and track performance goals as a means to improve efficiency. (p. 36/GAO Draft Report)

DoD RESPONSE: Concur. An improved performance measurement system has been directed by the Naval Air Systems Command to be implemented by the naval aviation depots. This management direction was provided at the February 1989 Fleet Readiness Support Meeting. Finalization of approved, meaningful performance measurements is targeted for completion by the end of FY 1989, with implementation commencing in FY 1990.

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