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Report to the Assistant Secretary of the Navy (Shipbuilding and Logistics)

October 1986

NAVY MAINTENANCE

Opportunities to Improve Aircraft Intermediate Maintenance

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General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

B-224796

October 22, 1986

The Honorable Everett Pyatt
The Assistant Secretary of the Navy
(Shipbuilding and Logistics)

Dear Mr. Pyatt:

Our review of the Navy's aircraft intermediate maintenance program indicates that the Navy recognizes the importance of the program and has taken some actions to bring about improvements. This report discusses some areas where we believe that further improvements can be made.

We identified significant differences in repair rates, turnaround times, and capabilities among intermediate maintenance activities. Although the Navy is aware of these differences, it has not established a management mechanism for systematically investigating the differences to identify the factors that contribute to the ability of some activities to do better than others. Once identified, Navy management would be in a position to select the best practices and procedures of individual activities and implement them at additional activities where feasible and cost effective.

Background

Navy aircraft maintenance is performed at three levels— organization, intermediate, and depot. The intermediate level calibrates, repairs, and replaces damaged or unserviceable components removed from aircraft; manufactures nonavailable parts; and makes periodic inspections. Intermediate maintenance activities are called Aircraft Intermediate Maintenance Departments (AIMDs). A total of 87 AIMDs are located aboard ships and at air stations. Each AIMD comes under one of five major commands, including the Naval Air Forces, Atlantic Fleet, and the Naval Air Forces, Pacific Fleet. In fiscal year 1984, intermediate maintenance was performed by about 22,000 people, mostly military, at a cost of $970 million.

Variances in Repair Rates

Overall maintenance costs can be reduced by repairing more items at the intermediate level instead of sending them to the depot level for repair. The Navy, recognizing the importance of using the AIMDs, established percentage goals for increasing intermediate level repairs and, between fiscal year 1983 and the first half of fiscal year 1986, the percentage of

items actually repaired by the AIMDs increased from 68 percent to 72 percent of the items processed for intermediate and depot level repair.

Although overall percentages showed increases, repair rates varied considerably among individual AIMDs located at Naval Air Stations (NASs).

Table 1: Repair Rates at Selected AIMDs (Percent Repaired)

	FY 1983	FY 1984	FY 1985	FY 1986a
Atlantic Fleet				
NAS Brunswick	64	61	68	68
NAS Cecil Field	72	74	74	75
NAS Jacksonville	74	76	76	75
NAS Norfolk	63	63	64	65
NAS Oceana	72	76	75	74
Pacific Fleet				
NAS Lemoore	71	64	67	65
NAS Miramar	70	70	74	76
NAS Moffett Field	77	76	82	84
NAS North Island	60	60	68	71
NAS Whidbey Island	76	76	76	75

[a]First six months

The repair rates even varied considerably among bases with the same type of aircraft. For example, in fiscal year 1985 the Brunswick AIMD had a repair rate of 68 percent, the Jacksonville AIMD had a repair rate of 76 percent, and the Moffett Field AIMD had a repair rate of 82 percent. All three AIMDs support the P-3C aircraft.

Variances in Repair Turnaround Times

Repair turnaround time represents the calendar days between the removal of a component from an aircraft for processing through an AIMD until it is available for reinstallation or determined to be beyond the capability of an AIMD to repair. Turnaround time is a major determinant of the quantity of an item that is authorized for stock. The longer the turnaround time, the more assets are required.

Component repair times varied considerably between the Atlantic and Pacific Fleets and among individual AIMDs. For example, in fiscal year 1984 the AIMD at NAS Brunswick had a considerably higher repair turnaround time (6.3 days) than had the AIMD at NAS Jacksonville (4.0 days), even though both bases support the P-3 aircraft. As another example, the AIMD at NAS Norfolk averaged 12.2 days in repair turnaround time,

while the AIMD at NAS Oceana averaged 6.2 days. In the Pacific Fleet, the AIMD at NAS Lemoore averaged 8.8 days, while the AIMD at NAS Whidbey Island averaged 6.6 days. The latter two bases both support attack-type aircraft, although different models (A-7E versus A-6E).

We reviewed the repair of some specific components and identified several differences between bases repairing the same items which contributed to variances in repair turnaround times. These differences related to repair priorities and procedures, personnel use, and quantities and types of test and support equipment used. For example, in fiscal year 1984 the Oceana AIMD averaged 1.1 days to repair the F-14A AWG9 radar transmitter (NSN-1430-01-073-4475), whereas the Miramar AIMD averaged 2.7 days. We estimate that if Miramar's turnaround time had equalled Oceana's in fiscal year 1984, two fewer transmitters, each costing $168,800, would have been required for stock.

Oceana used an AN/ASM-624 calibration cart to calibrate test equipment in the transmitter work center. This enabled the work center to keep more of its test equipment in the shop without having to wait while this equipment was in the calibration work center. Miramar also has had a calibration cart since 1982 but was not allowed to use it as a result of a Pacific Fleet direction to wait for approval of final test procedures for the cart. Personnel at Miramar said that, at times, the repair shop did not have the necessary equipment to test the transmitter because the test equipment was backlogged, awaiting processing in the calibration shop.

Variances in Repair Capabilities

NAVAIRINST 4790.18 establishes policies and procedures for the management, maintenance, and use of the Individual Component Repair List (ICRL) program, a program through which AIMDs report their capabilities to repair specific components. Using this program, we compared repair capabilities of some of the major AIMDs and identified considerable variations among AIMDs repairing the same aircraft components:

- A-6E: Capabilities to repair items varied for 202 of 610 items matched at Oceana and Whidbey Island (33 percent).
- A-7E: Capabilities to repair items varied for 325 of 1,150 items matched at Cecil Field and Lemoore (28 percent).
- F-14A: Capabilities to repair items varied for 386 of 1,448 items matched at Oceana and Miramar (27 percent).
- P-3C: Capabilities to repair items varied for 410 of 1,586 items matched at Jacksonville and Moffett Field (26 percent).

- S-3A: Capabilities to repair items varied for 292 of 1,694 items matched at Cecil Field and North Island (17 percent).

For example, Jacksonville showed a full repair capability for a P-3C aircraft antenna (NSN-5841-00-119-4526), costing $77,670, whereas Moffett Field showed no repair capability. Similarly, Miramar showed a full repair capability for a F-14A aircraft oscillator (NSN-1430-00-124-0690), costing $22,090, whereas Oceana showed only a limited repair capability.

The Navy has initiated individual programs to increase repair capabilities for specific components. However, we found that some of these programs were not fully implemented. The cable/connector repair program illustrates this condition. In June 1980, the Naval Air Systems Command (NAVAIR) established a program to repair or manufacture wiring cables, harnesses, and connectors at the intermediate level instead of sending them to the depot for repair or throwing them away and acquiring new ones. According to the Navy, wiring-related problems are a leading consumer of unscheduled maintenance labor hours for aircraft. The cable/connector repair program was prototyped at the Cecil Field AIMD. NAVAIR estimated that the site had saved over $24 million during a 3-year period by having full repair capability. For instance, Cecil Field had saved $34,500 by manufacturing 30 sets of S-3A Electronic Surveillance Measures harnesses instead of buying them from a vendor.

NAVAIR estimated that it would cost about $40,000 to provide the equipment needed to establish the cable/connector repair program at an AIMD. Despite the low cost in relation to the demonstrated savings at Cecil Field, NAVAIR has not moved quickly to establish the program at other AIMDS.

The program was planned for 49 AIMDS but, at the end of our review, only 6 had the equipment to provide full repair capability. The other 43 AIMDS were scheduled to receive full repair capability between fiscal years 1985 and 1989, but NAVAIR officials stated that, as of July 1986, funds to acquire the necessary test equipment and tools were not available and were not budgeted for fiscal year 1988. Furthermore, full repair capability is not planned for the remaining 38 AIMDS included in the total of 87 AIMDS.

Conclusions

Navy Headquarters and Fleet activities are aware of the large variances in repair rates, capabilities, and turnaround times among individual

AIMDs. However, they have not analyzed these variances to identify the best practices and procedures of the individual AIMDs. Navy officials stated that they do not compare maintenance statistics among the AIMDs because they considered the differences in repair conditions and aircraft at each location to be too great to make meaningful comparisons. They stated that variances could be caused by differences in facility layouts, supply support, training, number and experience level of personnel, and management attitudes.

While these factors can contribute to variances, we identified other factors which also contribute to variances among AIMDs repairing the same components. These factors include repair priorities and procedures, personnel use, and quantities and types of test and support equipment used. We believe that detailed reviews of these factors by experienced maintenance personnel could identify opportunities to improve maintenance. Once identified, the best practices and procedures could be applied, subject to the availability of funds, to other AIMDs, particularly where the same aircraft and components are being repaired at multiple locations. We believe that one of the reasons for the lack of attention to the problems of the AIMDs is that sufficient management oversight has not been provided. The Navy needs to establish a management mechanism for (1) analyzing and investigating variances in repair rates, capabilities, and turnaround times between commands and among AIMDs, (2) identifying the factors that contribute to the ability of some activities to do better than others, and (3) selecting the best practices and procedures of the individual AIMDs and implementing them at other AIMDs where feasible and cost effective.

Recommendations

We recommend that you establish a management mechanism for analyzing repair rates, capabilities, and turnaround times; investigating variances between commands and among AIMDs to identify the factors that contribute to the ability of some activities to do better than others; and selecting the best practices and procedures of the individual AIMDs and implementing them at other AIMDs where feasible and cost effective.

We also recommend that you direct that ongoing programs to increase repair capabilities for specific components, such as the cable/connector program, be implemented where feasible and cost effective.

Views of Agency Officials

We discussed a draft of this report with Department of Defense and Navy officials. They generally agreed with the intent of our recommendations but stated that they would have to give further study to the feasibility of implementing them from a cost and resource standpoint. The officials also stated that the Navy has drafted a productivity improvement plan that contains initiatives for improving aircraft intermediate maintenance. The draft plan currently is with the Atlantic Fleet for comment.

Objective, Scope, and Methodology

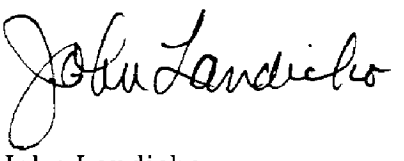
Our objective was to study the intermediate level of Navy aircraft maintenance to identify opportunities for improvements that could reduce overall Navy maintenance costs and improve efficiency and effectiveness. We concentrated on AIMDs of the Atlantic and Pacific Fleets.

We obtained and analyzed component repair statistics and other related data from standard and specially prepared reports generated by the Navy's Maintenance Material Management system. We reviewed several specific components in detail to identify factors that contributed to variances in repair rates, capabilities, and turnaround times among different AIMDs that repaired the same items. Repair practices, procedures, and other factors were compared at the major east and west coast AIMDs processing the largest quantities of items in fiscal year 1984.

We also interviewed maintenance and supply officials at many levels including those at Navy and Fleet headquarters and specific AIMDs, reviewed documentation and reports provided by these officials, and observed maintenance operations. Our review was made in accordance with generally accepted government auditing standards.

We would appreciate being notified about any actions you plan to take on the recommendations. We are sending copies of this report to the Secretaries of Defense and the Navy.

Sincerely yours,



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