DEPARTMENT OF DEFENSE

AUDIT REPORT

PHASED ORGANIC DEPOT MAINTENANCE
OF AVIATION WEAPON SYSTEMS

No. 90-100

August 15, 1990

Office of the
Inspector General

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202-2884

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MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (FINANCIAL MANAGEMENT)
ASSISTANT SECRETARY OF THE NAVY (FINANCIAL MANAGEMENT)
ASSISTANT SECRETARY OF THE AIR FORCE (FINANCIAL MANAGEMENT AND COMPTROLLER)

SUBJECT: Report on the Audit of Phased Organic Depot Maintenance of Aviation Weapon Systems (Report No. 90-100)

We are providing this final report on the Audit of Phased Organic Depot Maintenance of Aviation Weapon Systems for your information and use. Comments received in response to a draft of this report were considered in preparing the final report. We made the audit from September 1989 through March 1990 at the request of the Deputy Assistant Secretary of Defense (Logistics), Office of the Assistant Secretary of Defense (Production and Logistics). The objectives of the audit were to determine if the Military Departments' plans for the transition from contractor to Government (organic) maintenance support were effective, if the transition plans allowed adequate time for equipment and training requirements to stabilize before conversion to organic maintenance, and if the transition plans allowed the flexibility of transitioning by equipment subsystem or only by complete weapon system. The audit also evaluated the effectiveness of applicable internal controls.

The audit concentrated on the availability and execution of plans for establishing organic depot maintenance for the Army's AH-64, the Navy's F/A-18, and the Air Force's F-16 aviation weapon systems. These systems were selected because they had been in production long enough for the design of many of their components to stabilize and transition to organic depots. Also, they were chosen because of the magnitude of the annual payments to contractors for depot repair of their components. During FY 1989, the Government paid about $200 million to contractors to maintain components of the weapon systems, which the Military Departments had intended to have transitioned to organic depot maintenance.

The audit showed that the Military Departments had developed plans for transitioning depot maintenance from contractor to organic sources on the weapon systems. The plans were flexible and allowed for transition of the weapon system by equipment subsystem. The plans also allowed reasonable time for equipment and training requirements to stabilize before conversion.

However, the requirement to prepare plans during the development of the weapon systems was not enforced, and the plans did not result in timely transition from contractor to organic maintenance. As a result, the Military Departments were paying excessive costs for maintenance of the aviation weapon systems. The results of the audit are summarized in the following paragraph, and the details, audit recommendations, and management comments are in Part II of this report.

The Military Departments did not establish timely organic depot maintenance and transition the AH-64, F/A-18, and F-16 aircraft to organic depot maintenance on the planned dates. As a result, the Military Departments paid more for contractor maintenance than they would have paid for organic depot maintenance. For example, economic analyses performed by the Army showed that transitioning to organic maintenance after the design of the AH-64 airframe and some of its avionics' components became reasonably stable would reduce life cycle maintenance costs by $38.3 million. We recommended that the Army Materiel Command enforce the policy that Material Fielding Plans and Depot Maintenance Support Plans be prepared during development of each Army aviation weapon system, that the Fielding Plans include plans to transition from contractor to organic support, and that Army aviation maintenance offices update their Depot Maintenance Support Plans. We recommended that the Naval Aviation Systems Command enforce the policy that requires that a transition plan be published before fielding a weapon system and updated annually, establish oversight over reporting the status of the transition of weapon systems to organic depot maintenance, and revise the information reported in the F/A-18's Depot Transition Index to show the correct status of the transition of the F/A-18's components. We recommended that the Air Force Systems Command enforce the policy that Depot Maintenance Activation Plans be prepared during development of weapon systems (page 5).

The audit identified internal control weaknesses as defined by Public Law 97-255, Office of Management and Budget Circular A-123, and DoD Directive 5010.38. Controls were not effectively implemented to ensure that all the required plans for the transition of the AH-64, F/A-18, and F-16 weapon systems were prepared during system developement and that existing plans were monitored. Recommendations in this report, if implemented, will correct the weaknesses.

The monetary benefits that can be realized by implementing the recommendations in this report cannot be determined because the benefits would accrue on future weapon systems (Appendix G). Therefore, no monetary benefits are being claimed. Copies of this report will be provided to the senior officials responsible for internal controls within each of the Military Departments.

On May 16, 1990, a draft of this report was provided to the addressees for comments. The Army's Acting Director of Supply and Maintenance, Office of the Deputy Chief of Staff for Logistics, provided comments on July 19, 1990. The comments fully complied with the requirements of DoD Directive 7650.3. The Acting Director concurred with the Finding and Recommendations A.1.a. and A.1.b. and provided target dates for completing corrective actions. Accordingly, additional comments on the final report are not required. The complete text of the Army's response is in Appendix F. Comments were received from the Navy August 9, 1990. The Navy concurred with the recommendations in the report, but the comments were received too late to be included in the final report. The Navy comments met the requirements of DoD Directive 7650.3, therefore, additional comments on the final report are not required. As of August 9, 1990, the Air Force had not responded to the draft report. We request that Air Force respond to the final report indicating concurrence or nonconcurrence in the Finding and each Recommendation addressed to you. If you concur, describe the corrective actions taken or planned, the completion dates for actions already taken, and the estimated dates for completion of planned actions. If you nonconcur, please state your specific reasons. If appropriate, you may propose alternative methods for accomplishing desired improvements. We also ask that your comments indicate concurrence or nonconcurrence with the internal control weakness described above.

DoD Directive 7650.3 requires that audit recommendations be resolved within 6 months of the date of the final report. Accordingly, comments on unresolved issues in the report should be provided within 60 days of the date of this memorandum.

The courtesies extended to the audit staff are appreciated. If you have any questions on this audit, please contact Mr. Thomas Gimble on (202) 694-6227 (AUTOVON 224-6227) or Mr. James Kornides on (202) 693-6223 (AUTOVON 223-6223). A list of the audit team members is in Appendix I. Copies of this report are being provided to the activities listed in Appendix J.

Edward R. Jones
Deputy Assistant Inspector General
for Auditing

Enclosures

cc:
Secretary of the Army
Secretary of the Navy
Secretary of the Air Force

REPORT ON THE AUDIT OF PHASED ORGANIC DEPOT MAINTENANCE OF AVIATION WEAPON SYSTEMS

TABLE OF CONTENTS

	Page
TRANSMITTAL MEMORANDUM/EXECUTIVE SUMMARY	i
PART I - INTRODUCTION	1
Background	1
Objectives and Scope	2
Internal Controls	2
Prior Audit Coverage	3
Other Matters of Interest	3
PART II - FINDING AND RECOMMENDATIONS	
Extended Periods of Contractor Depot Maintenance	5
APPENDIXES	See next page.

Prepared By:
Logistics Support Directorate
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APPENDIXES

		Page
APPENDIX A -	Other Factors Contributing to the Delays in Establishing and Transitioning to Organic Maintenance Capability	15
APPENDIX B -	Elapsed Time to Transition the AH-64 Aircraft's Components to Organic Depot Maintenance	21
APPENDIX C -	Elapsed Time to Transition Lots III Through VI of the F/A-18 Aircraft to Organic Depot Maintenance	23
APPENDIX D -	Elapsed Time to Transition the F-16A/B Aircraft Components to Organic Depot Maintenance	25
APPENDIX E -	Comparison of the Cost to Perform Repairs on the F-16A/B Components by the Contractor to the Organic Cost	27
APPENDIX F -	Department of the Army Comments	29
APPENDIX G -	Summary of Potential Monetary and Other Benefits Resulting From Audit	31
APPENDIX H -	Activities Visited or Contacted	33
APPENDIX I -	Audit Team Members	35
APPENDIX J -	Final Report Distribution	37

REPORT ON THE AUDIT OF PHASED ORGANIC DEPOT MAINTENANCE OF AVIATION WEAPON SYSTEMS

PART I - INTRODUCTION

Background

The Military Departments assess cost, schedule, deployment needs, and design stability factors to determine if Government (organic) maintenance or contractor maintenance will be used to support a weapon system.

Based on their assessments, the Military Departments decide whether to transfer maintenance from contractors to organic depots for many of the components on each weapon system. There are, however, some components and weapon systems that are planned to be repaired by contractors during their entire lives because the Military Departments determine that contractor support is the most efficient and effective support plan.

Once a Military Department decides to repair a weapon system, or one of its selected components, at an organic depot, the Military Department establishes repair capability as soon as possible.

The transition of a weapon system from contractor to organic maintenance normally occurs in phases with the organic depot incrementally assuming a larger proportion of the work load as design of the component stabilizes and repair capability is established.

To facilitate an orderly and effective transition from contractor to organic support and to ensure transition of work load as soon as possible after organic capability is established, the Military Departments require that transition plans be developed for each weapon system. Transition plans establish the milestones for each phase of the transition and the actions required to achieve transition.

Between the fielding of a weapon system's components and certification that the organic repair facility can repair those components, the Military Departments rely on contractors to repair components. The Military Departments procured contractor support totaling about $200 million during FY 1989 for the three weapon systems we reviewed.

Objectives and Scope

The audit was requested by the Deputy Assistant Secretary of Defense (Logistics), Office of the Assistant Secretary of Defense (Production and Logistics). The objectives of the audit were to determine:

- if the Military Departments' plans for the transition from contractor to organic depot maintenance support were effective,

- if the transition plans allowed adequate time for equipment and training requirements to stabilize before conversion to organic maintenance, and

- if the transition plans allowed the flexibility of transitioning by equipment subsystem or only by complete weapon system.

The audit also evaluated the effectiveness of applicable internal controls.

This economy and efficiency audit was made from September 1989 through March 1990 in accordance with auditing standards issued by the Comptroller General of the United States as implemented by the Inspector General, DoD, and accordingly included such tests of internal controls as were considered necessary. We primarily focused our examination on transition plans for FY's 1988 and 1989 and records that documented the transfer of maintenance from contractor to organic sources for the Army's AH-64, the Navy's F/A-18, and the Air Force's F-16 aircraft. However, we selectively reviewed documents relating to the transition as far back as the origin of each system. We also examined FY 1989 budget documentation to determine the cost of interim contractor support for the three weapon systems we reviewed. The AH-64, the F/A-18, and the F-16 were selected for review because of the magnitude of funds each program needed to pay for contractor repair of components. Also, each system had been in production long enough for the design of many of its components to stabilize and transition to organic depots. Activities visited or contacted during the audit are shown in Appendix H.

Internal Controls

We evaluated internal controls over the planning of the transition from contractor to organic depot maintenance for the AH-64, the F/A-18, and the F-16 aircraft by determining if controls existed to ensure that all the required plans were prepared during system developement and that the plans were monitored. We found internal control weaknesses in the methods

that the Military Departments used to plan and monitor the transition to organic depot maintenance. The weaknesses are discussed in Part II of this report.

Prior Audit Coverage

Inspector General, DoD, Special Report (no number assigned), "Audit of Financial and Program Management of the F/A-18 Program," April 14, 1983, found many weaknesses in the Naval Air Systems Command's (NAVAIR) financial controls and accounting practices for the F/A-18 program. The report stated that when the costs of the F/A-18 airframe increased, NAVAIR realigned funds from several other related weapons and support items rather than seek additional funds from Congress or reduce the congressionally approved number of F/A-18's. The report recommended that the Navy execute its budget in accordance with congressional budget submissions. The Navy disagreed stating that Congress had been kept informed of the realignment during hearings on the program. However, a follow-on Inspector General, DoD, Audit Report No. 84-130, "Congressional Request for Additional Information on the Financial Management of the F/A-18 Program," September 14, 1984, showed that the Navy was taking action to realign the funds.

Inspector General, DoD, Report No. 86-082, "Acquisition of Engineering and Technical Data from Contractors for the Maintenance of Three Army Helicopter Systems," March 12, 1986, stated that contractor depot maintenance support was extended 4 years beyond the scheduled transition dates to in-house depot maintenance support for the UH-60 and CH-47 helicopter systems, and the AH-64 helicopter would not meet its planned transition date to in-house depot maintenance support in FY 1987. Although the report did not recommend action, the Army commented that the AH-64 would meet its 1987 transition date. The Army stated, "It should be noted that transition is a transfer of management responsibility. Various components will be phased into organic depots commencing in 1987."

The General Accounting Office's Report No. GAO/NSIAD 89-15 (OSD Case No. 7718), "Strategic Bombers, B-1B Maintenance Problems Impede Its Operations," October 1988, concluded that the Air Force had not received, as planned, the support equipment and repair instructions needed to perform its own maintenance and repairs. As a result, interim contractor support costs had increased. DoD agreed with the findings in the report. The report contained no recommendations.

Other Matters Of Interest

In a January 1990 letter to the Aerospace Industries Association of America, Inc., the Assistant Secretary of Defense (Production

and Logistics) called upon private industry to submit new ideas about logistically supporting weapon systems before OSD decides on changes in the logistics area. The Assistant Secretary noted that the Air Force had already taken several steps to provide a better way of initially fielding a supported weapon system.

During this audit, we obtained information from the Air Force that described its latest policies and procedures regarding weapon system support. Specifically, Air Force Systems Command Regulation 550-15, "Fielding Supported Weapon Systems," August 2, 1988, prohibits program directors from making unilateral decisions that result in fielding a weapon system that is not fully supported. The Air Force policy stresses the goal of delivering a fully supported weapon system and obtaining organic capability at the earliest opportunity. The Air Force's strategy is to shorten or eliminate the period of dependence on interim contractor support by using the contractual process to get the contractor to field the required elements of support in time.

The Air Force's strategy, termed "system support," links the delivery of the mission hardware to the delivery of the support elements. Under this strategy, the contractor is required to provide the logistics deliverables (support and training equipment, technical data, and critical spares) with the mission equipment (the weapon system) or support the system at no additional cost to the Government until the required support is delivered.

The Air Force policy has not been in effect long enough to show long term results. However, the Air Force has indicated that the program has been modeled after weapon systems, such as the Joint Surveillance and Target Attack Radar System and the C-17 aircraft. Future Air Force weapon systems should have better results in establishing organic capability based upon early and better advanced planning.

PART II - FINDING AND RECOMMENDATIONS

Extended Periods of Contractor Depot Maintenance

FINDING

The Military Departments did not establish timely organic depot maintenance for the AH-64, F/A-18, and F-16 aircraft and did not transition the work load from the contractor on the planned dates. This occurred because the initial depot maintenance plans were either not completed during development of the weapon system or, when the plans were completed, were not adequately monitored to ensure the transition occurred as planned. Also, the transitions were not occurring on the planned dates because test equipment and technical data were not delivered, design of major subsystems of the weapon systems changed too often to permit an investment in organic capability, and funding for establishing and maintaining organic depot maintenance was interrupted, redirected, or eliminated. As a result, the Military Departments paid more for contractor maintenance than they would have paid for organic depot maintenance. For example, economic analyses that the Army performed showed that transitioning to organic depot maintenance after the design of the AH-64 airframe and some of its avionics' components became reasonably stable would reduce life cycle maintenance costs by $38.3 million.

DISCUSSION OF DETAILS

Background. Department of Defense Directive 4151.1, "Use of Contractor and DoD Resources for Maintenance of Materiel," July 15, 1982, section E, paragraph 1, requires that during the introduction of a weapon system, contractor maintenance be used for those items for which a maintenance capability does not exist and cannot be developed at minimum costs. This contractor maintenance shall be used until system design, reliability and maintainability characteristics, maintenance procedures, and maintenance training requirements are stabilized.

Section E, paragraph 3, of the Directive states that initial plans for contractor and organic support of new systems shall be established as part of the integrated logistics support planning process. The integrated logistics support planning process is described in Department of Defense Directive 5000.39, "Acquisition and Management of Integrated Logistics Support for Systems and Support," November 17, 1983. Enclosure 3, paragraph 2.b., of Directive 5000.39 requires that by Milestone I, "Demonstration and Validation of the Weapon System," a tentative schedule for phased transition from contractor to organic support be developed, if applicable.

To complete the audit, we examined the transition plans and transition schedules that the program management and maintenance offices maintained for the AH-64, the F/A-18, and the F-16 aircraft. We analyzed the plans to determine if they were prepared as required and if the transitions were occurring as planned.

In general, the Military Departments followed established plans to transfer maintenance for the AH-64, the F/A-18, and the F-16 aircraft from contractor to organic activities. The plans indicated that the Military Departments expected organic capability to be established and the transition to organic depot maintenance to occur from 5 to 7 years after the weapon system was operational. The audit showed that the transition of each weapon system actually took longer than the planned 5 to 7 years. The audit showed that it will take about 10 to 13 years to transition all the subsystems in these three weapon systems to organic support.

We attributed these delays in part to preparation of transition plans after the weapon systems were developed and being produced or insufficient monitoring of the transitions. Also, the Military Departments' inability to obtain technical data and test equipment significantly hampered their ability to establish organic capability. The principal difficulty was contracting out for data and equipment needed by the organic depots to begin repairing components.

The technical data and test equipment were further delayed because components of the weapon systems changed too often to permit an investment in organic repair capability. Also, the Military Departments were unable to obtain or retain the funding needed to purchase the logistics items (support and training equipment, technical data, and spare parts) and thereby establish capability when planned. Further details on the problems with technical data and test equipment, configuration changes, and funding are provided in Appendix A.

The status of the weapon systems that were intended to transition and the problems in planning and monitoring each transition are discussed in the following paragraphs.

Army AH-64

Status of Transition. As of the date of the audit, the Army had only transitioned the AH-64's engines into its depot at Corpus Christi, Texas (Appendix B). Corpus Christi Army Depot (CCAD) personnel indicated that the organic capability existed for the engines because the engines in the AH-64 were almost identical to engines used on other Army helicopters that were already being maintained there. The Army will continue to pay

contractors to provide depot level maintenance on AH-64 components until 1994 or 10 years after delivery of the first aircraft (Appendix B).

Planning. While the AH-64 was being fielded, the Army issued new policy to improve the Integrated Logistics Support process used during acquisition of weapon systems. Army Regulation 700-127, "Integrated Logistics Support," January 1987, chapter 5, section 5-4c, states that a Material Fielding Plan will be used to provide a description of specific support concepts. The Plan will contain a transition plan for those systems fielded using interim contractor support. This plan will contain sufficient detail to provide for smooth transition from contractor to organic support.

The Army developed a Material Fielding Plan for the AH-64 in September 1988. The Army revised the Plan in February 1989. However, the Plan did not contain sufficient detail to provide for the transition to organic depot support. The revised Plan only contained a statement that contractor depot maintenance was planned as an interim measure due to the low density of AH-64's during the early years of production.

At the time of the audit, the Army was using the Consolidated Apache AH-64 Depot Maintenance Support Plan (DMSP), completed in August 1988, to transition the AH-64 into its aviation depot at CCAD. The DMSP contained information developed by each of the Army Materiel Command's Major Subordinate Commands on the AH-64 depot reparables that they managed. The Army's Aviation Systems Command (AVSCOM) coordinated the input from each Major Subordinate Command.

The DMSP contained a list of those reparables that were contractor supported and those that will have organic depot maintenance capability established. The DMSP also contained information on the status of the five critical items needed to establish organic depot capability: Depot Maintenance Work Requirements, Depot Maintenance Plant Equipment, training, a Materials Requirements List, and initial overhaul.

Although the Army had a DMSP for the AH-64, the Army did not prepare a DMSP during development of the weapon system. Army Regulation 700-127, "Integrated Logistics Support," paragraph 2-2a(4)(b), requires that before Milestone I-- Demonstration and Validation-- the Weapon System Program Office develop and coordinate the initial Integrated Logistics Support Plan to include a DMSP. The AH-64 achieved Milestone I in 1976. However, the Army did not begin developing the DMSP for the AH-64 at CCAD until the aircraft was being deployed in 1987 or 11 years after the aircraft achieved Milestone I.

AVSCOM personnel indicated that the AH-64 program manager did not plan for maintenance of the AH-64 at the organic depot. The program manager relied on the contractor for depot support. The AH-64 program manager transferred responsibility for ensuring that the AH-64 obtained organic depot maintenance to the AVSCOM Maintenance Directorate in FY 1987 (3 years after delivery of the first AH-64 to the Army in FY 1984). The development of a maintenance plan was not started until the management responsibility was transferred. As a result, the Army had already paid for 3 years of contractor support before it developed plans to transition maintenance from the contractor to the organic depot.

The Army produced the first consolidated DMSP for the AH-64 in May 1987. However, a revised consolidated DMSP has not been prepared since August 1988 even though AVSCOM has changed its part of the plan twice, and the dates to establish organic capability at CCAD have slipped 1 year on some of the components. The DMSP was scheduled to be updated by June 1989; however, as of February 1990, it had not been updated. As a result, CCAD continues to plan for the AH-64 based on the FY 1988 DMSP.

We noted that the Army was working to improve the maintenance planning for its next generation aircraft, the Light Helicopter. Although the Light Helicopter is still in development, the program manager indicated that the Army's acquisition strategy is as specified in Army Regulation 700-127 and will include requirements in the production contract for delivery of all items needed to support the aircraft. The Army also plans to require that maintenance training be developed at the time of development of the aircraft.

Benefits of Timely Transition. The potential benefits of establishing a good maintenance plan early in a weapon system's development and ensuring that the plan is effectively implemented are demonstrated by the Army's economic analyses of the AH-64. For example, an analysis that the Army performed in 1989 to determine the best method of maintenance for one of the AH-64's primary components, the Target Acquisition Designation Sight/Pilot Night Vision Sensor, stated that organic support would cost $12.3 million less than relying on contractor maintenance during the 20-year life cycle of the system. The difference in contractor and organic depot maintenance costs was attributed primarily to lower labor rates at the organic depots.

In addition, an Army economic analysis, which was completed in February 1985, indicated that combined recurring and nonrecurring costs for contractor support of AH-64 airframe components would be about $26 million more than for the organic depot support. The Army studies together show that $38.3 million could be saved by transitioning from contractor to organic depot maintenance.

Navy F/A-18

Status of Transition. The Navy published a Depot Maintenance Program Plan (DMPP) in FY 1984. The Plan indicated that the Navy intended to be fully capable of supporting all F/A-18 components at the Naval Aviation Depots at North Island, California, and Jacksonville, Florida, in 1989 or 7 years after the aircraft became operational in 1982. We were unable to obtain any documentation that indicated that the Navy had ever intended to be capable of maintaining the F/A-18 at its organic depots earlier than FY 1989.

As of February 2, 1990, Navy briefing documents projected that the Navy would not be capable of repairing the aircraft at those depots until 1994. The Navy's documents showed that the depot at North Island had reached about 55 percent of its planned capability, and the depot at Jacksonville had reached about 60 percent of its planned repair capability for the F/A-18 components.

Navy personnel at the Aviation Depot at North Island stated that new versions of the aircraft with many new parts were pushing the transition schedule well beyond the original target of 1989, but that older models of the aircraft were being almost entirely repaired by the organic depots. The transition schedule was pushed beyond the original target because the new parts needed new test equipment and technical data that required additional time to obtain. Our analysis of information obtained at North Island did not support the Navy's statement that most of the components of older aircraft were being repaired by the organic depot.

We analyzed the Navy's capability to repair Lots III through VI of the aircraft at North Island. A Lot is a group of F/A-18 aircraft that have identical parts. The objective of our analysis was to determine the time it took to achieve organic capability on primary components of the earliest production models of the aircraft. We did not evaluate the capacity to repair the aircraft at Jacksonville.

Our analysis showed that 57 percent of the aircraft's primary components had transitioned within 7 years after production of the final aircraft in Lot VI in 1982. The remaining 43 percent will not complete their transition until 10 years after the aircraft was initially produced (Appendix C).

Planning. Chief of Naval Operations Instruction 5000.49A, "Integrated Logistic Support (ILS) in the Acquisition Process," January 30, 1987, paragraph 7.e.(2), requires that when contractor support is used, a plan for transition to Government support be drawn up by the Integrated Logistics Support Manager and the plan be published 6 months before initial equipment fielding and updated annually until the transition is complete.

The earliest plan we could obtain that showed the Navy's overall strategy for transitioning the F/A-18 into the organic depots was the F/A-18 DMPP, which was published in FY 1984 or 4 years after aircraft production began in 1980. The plan projected full organic capability in FY 1989. The plan was updated and republished in December 1989.

That 1984 plan indicated that the Naval Air Logistics Center would be responsible for monitoring the transition from contractor to organic support. In FY 1987, the Navy reorganized the Naval Air Logistics Center, which became the Naval Depot Operations Center. At that time, the Navy transferred the responsibility of monitoring the F/A-18 transition from the Naval Depot Operations Center to the Naval Air Systems Command (NAVAIR). However, NAVAIR did not have the resources to perform the oversight functions that the Naval Air Logistics Center had performed. NAVAIR was given the mission, but not the resources.

Also a Transition Tracking System that the Naval Air Logistics Center developed and operated to monitor the transition was discontinued before the reorganization. As a result, NAVAIR could not ensure that the organic depots possessed the capabilities that they reported and could not determine if the transition was occurring as planned.

The DMPP did not contain detailed information on each F/A-18 component's completed or anticipated transition. As a result, NAVAIR relied upon an F/A-18 Depot Transition Index, prepared by the prime contractor, to obtain the status on the transition of all the parts in the aircraft from contractor to organic depot maintenance.

The information on the Depot Transition Index indicated that more than half of the parts in the aircraft could be repaired by organic sources. Our analysis showed that the capability was less. We judgmentally selected 101 parts from the Index to determine if those items that were shown as "Transition Complete" had actually transitioned.

Our analysis showed that 38 parts had completely transitioned to the organic depots, 41 parts were considered to be throwaway items even though they were coded as transitioned to a depot that could repair them, and 22 parts were considered transitioned although the Navy continued to rely on the contractor for part of the support. Our analysis concluded that the information in the Depot Transition Index overstated the status of the transition to the organic depots.

Benefits of Timely Transition. An internal Navy study of F/A-18 avionics has shown that it is cost-effective to repair F/A-18 avionics' components organically. The study showed that repairing the avionics' components for Lot XII of the F/A-18 at the North Island and Jacksonville depots rather than at the contractor operated facility at the Naval Air Station, Lemoore, would reduce costs by $4 million annually. The cost of avionics' repair for Lot XII aircraft at Jacksonville and North Island would be $5 million versus the contractor's cost of $9 million. The costs were based on FY 1988 labor rates.

Based on the study and the program office's ability to acquire the necessary support equipment, the Navy is phasing out the contract for contractor repair of avionics' components and, beginning with Lot XII, will repair the F/A-18's avionics' components at the Navy's depots.

Air Force F-16

Status of Transition. Of the three systems included in the audit, the F-16 aircraft was the oldest and had completed more of its transition to organic maintenance than the other two systems. The F-16 Integrated Logistics Support Plan stated that the F-16 would transition 3 to 5 years after the aircraft was operational. However, only 52 percent of the components on the oldest version of the F-16, the A/B model, transitioned in 5 years (Appendix D). An additional 47 percent transitioned between 6 and 9 years after the aircraft was operational. As of the time of the audit, there were six components (1 percent) on the F-16A/B that had not transitioned. Two of these components will not be transitioned until 1992 or 13 years after the aircraft became operational.

Although the transition of the F-16A/B is considered nearly complete, the audit showed that the Air Force had to go back to the contractor to obtain maintenance for some components. We judgmentally selected 107 of the 1,150 reparable components listed on the Air Force's FY 1988 F-16A/B Depot Reparables List to determine if the items that the List showed as having transitioned within 9 years of the aircraft becoming operational were actually being repaired at the depot. The audit showed that 25 (23 percent) of the 107 items were being returned to the contractors for repair.

Air Force personnel indicated that the components were sent back to the contractors for repair because the depot was receiving more items than it had capacity to repair, or it had declared capability to repair but subsequently found it could not repair the component.

Planning. We were unable to locate Air Force documentation concerning plans and revisions that were made to depot maintenance transition schedules during the first 5 years of F-16 deployment. In addition, as of February 1990, the Air Force had

not developed a Depot Maintenance Activation Plan for the F-16. A Depot Maintenance Activation Plan ensures that sufficient Government controlled resources are developed and acquired to support depot maintenance requirements.

Air Force Systems Command (AFSC) Regulation 800-32, "Depot Maintenance Activation Plan (DMAP)," June 15, 1988, paragraph 5.c.(1)(b), requires that an Activation Plan be prepared by the Weapon System Program Manager for all new systems, subsystems, equipment, munitions, and major modifications of weapon systems. A Depot Maintenance Activation Plan shows the events and schedules required to achieve organic depot maintenance capability for specified systems, equipment, and resources. AFSC Regulation 800-32, paragraph 7.a.(2), requires that an initial Activation Plan be published 30 days after the preliminary design review of the weapon system is completed. Headquarters, AFLC, personnel indicated that an Activation Plan for the F-16 had been discussed early in production of the aircraft, but the document had not been finalized.

The only document we could obtain that indicated the Air Force had planned and monitored the transition to organic support was the F-16 Depot Reparables List. The Air Force also relied on a Depot Maintenance Activation Working Group to monitor the transition.

The Depot Reparables List was a tracking document that showed the status of the transition. It included information on each major aircraft component and the projected and actual dates of component transition from contractor to organic support. The Activation Working Group used the Depot Reparables List to track those items that had not transitioned to the organic depots.

Although the F-16 transition to organic depot support was also affected by the factors listed in Appendix A, use of the Depot Reparables List and the Activation Working Group was not sufficient to ensure a timely transition of the F-16A/B components that the Air Force intended to support from its organic depots. The Working Group and the Depot Reparables List did not provide visibility over the events and resources required to achieve timely depot maintenance capability.

Benefits of Timely Transition. Air Force Logistics Command's Policy Letter, "Early Depot Activation," June 24, 1988, claimed that the cost of organic support was significantly less than comparable interim contractor support. Although the Air Force could not provide studies that supported the claim, we analyzed the cost of organic versus contractor maintenance to determine if organic support cost less.

We analyzed the 25 components that were returned to the contractor for repair because the depot was unable to do the work. We compared the cost of organic repairs for each of those items to the cost of repair by contractors. Appendix E shows the

results of our analysis. We concluded that if the Air Force had been able to perform the repairs in-house as planned, it would have avoided payments of nearly $1 million on 23 of the 25 F-16 components.

Conclusion. The Military Departments' item managers determine the source-of-repair early in the development of a weapon system. Normally, major weapon systems are supported in the organic facilities. We concluded that the Military Departments could reduce the time needed to establish capability and transition to organic maintenance and thereby reduce costs by implementing the following recommendations.

RECOMMENDATIONS FOR CORRECTIVE ACTION

1. We recommend that the Commander, Army Materiel Command:

a. Enforce the requirement that Material Fielding Plans and Depot Maintenance Support Plans be prepared by program managers during development of each Army aviation weapon system and that the Material Fielding Plans include plans to transition from contractor to organic support.

b. Enforce the requirement that Army Integrated Logistics Maintenance Support offices update Depot Maintenance Support Plans to provide the most current transition plan to Army components participating in the transition of the aviation weapon system.

2. We recommend that the Commander, Naval Aviation Systems Command:

a. Enforce the requirement that a transition plan be published before fielding a weapon system and that the plan be updated annually.

b. Establish oversight over reporting the status of the transition of weapon systems to organic depot maintenance to ensure that the status is properly reported and monitored and that the transition is completed as early as possible.

c. Verify that the information reported in the F/A-18's Depot Transition Index shows the correct status of the transition of the F/A-18's components.

3. We recommend that the Commander, Air Force Systems Command, enforce the requirement that Depot Maintenance Activation Plans be prepared during development of weapon systems to assist in achieving the earliest transition to organic sources.

MANAGEMENT COMMENTS

The Army's Acting Director of Supply and Maintenance, Office of the Deputy Chief of Staff for Logistics, concurred with the Finding and Recommendations A.1.a. and A.1.b. and has begun corrective actions. The Army plans to issue a Deputy Chief of Staff for Logistics policy letter reiterating the necessity for Materiel Fielding Plans and DMSP's by August 1990. Also, the Army is finalizing a Department of Army Pamphlet on the DMSP. The Pamphlet should aid the Army in getting properly prepared plans as it provides format, content, and procedures. A DMSP prepared in accordance with the Pamphlet will meet Depot System Command's needs. Publication is planned for December 1990. The complete text of Army's comment is included as Appendix F. The Navy concurred with the recommendations but their comments were received too late to be incorporated into the final report. No comments were received from the Air Force.

AUDIT RESPONSE TO MANAGEMENT COMMENTS

The Army's and the Navy's corrective actions are responsive. Based on the Army's comments, we modified the wording of Recommendation A.1.b. to reflect that Integrated Logistics Support Offices prepare DMSP's.

OTHER FACTORS CONTRIBUTING TO THE DELAYS IN ESTABLISHING AND TRANSITIONING TO ORGANIC MAINTENANCE CAPABILITY

Army AH-64

Technical Data and Test Equipment. Army personnel indicated that one of the chief reasons for the delays in the transition to the organic depots had been delays in obtaining technical data and test equipment. The Inspector General, DoD, reported this problem in 1986 in Report No. 86-082, "Acquisition of Engineering and Technical Data from Contractors for the Maintenance of Three Army Helicopter Systems." The report indicated that all the data packages for the AH-64's depot equipment were needed by January 1, 1984, in order to begin buying the depot equipment in FY 1985. As of December 1984, the contractor had delivered less than 10 percent of the required data packages for the depot equipment.

As of February 1990, the Army's Aviation Systems Command (AVSCOM) required 63 Depot Maintenance Work Requirements (DMWR's). DMWR's are technical manuals on how to repair a component. There were 22 purchased and 8 delivered (13 percent). The other critical element needed was the Depot Maintenance Plant Equipment (DMPE). The DMPE is needed to perform the repair. The Army needed 63 DMPE's, but only 9 were purchased.

The Army's attempt to break out depot maintenance repair among subcontractors and avoid the added cost of going through the prime contractor was hindered by the inability of several of its vendors to produce the technical manuals, the vendors' refusals to bid on contracts to develop DMWR's and DMPE's (nine no-bids were received in response to requests for proposals), and the vendors' submission of inadequate proposals. The subcontractors claimed they either did not have the technical staff to write the manuals and did not want to hire them or they were unable to devote resources to perform the work.

AVSCOM personnel indicated that the original production contract included a requirement for technical data and test equipment. However, the portion of the contract related to the DMWR's and DMPE's was level of effort and did not adequately address the product required. As a result, the technical data received were inadequate. The Army was required to obtain additional funds and negotiate new contracts to acquire the needed data and equipment.

OTHER FACTORS CONTRIBUTING TO THE DELAYS IN ESTABLISHING AND TRANSITIONING TO ORGANIC MAINTENANCE CAPABILITY (continued)

Information provided by the Army indicated that it takes 5 years to achieve organic capability from the date of contract award for DMWR's and DMPE's. Based on the status of the DMWR and DMPE as of February 1990, we estimate that the transition to organic depot maintenance for most of the aircraft's components will slip beyond FY 1994 to FY 1995. This is 11 years after delivery of the first aircraft in FY 1984.

The Army recognized the problems in obtaining technical data and test equipment and revised the policy for Integrated Logistics Support. Army Regulation 700-127, "Integrated Logistics Support," March 1, 1988, requires that the Integrated Logistics Support elements, that is, technical publication, training, etc., be identified as definitive contract line items and that they be separately priced.

Configuration Changes. Changes in the configuration of the AH-64's components also affected the Army's ability to prepare for a timely transition. Army records showed that the Army had experienced 2,121 design changes to AH-64 components since the first aircraft was produced in 1984. Army personnel indicated that the design changes made procurement of technical data and test equipment difficult. The Army did not want to invest in the maintenance capability for some of the components, such as the avionics system, until design was reasonably stable.

The Army anticipated that it would require 3 years of contractor support at the onset of the program because of unknown failure rates of the aircraft's components and instability of their design. However, Depot System Command (DESCOM) engineering personnel indicated that it takes an average of 10 years for design of some of the avionics' systems to stabilize.

Funding. The schedule for organic maintenance of the AH-64 also slipped because of funding problems. AVSCOM's Directorate of Maintenance indicated that the AH-64 maintenance budget had been cut several times since delivery of the first aircraft in FY 1984. For example, in March 1985, the AH-64 Project Management Office, in conjunction with AVSCOM, reduced the Corpus Christi Army Depot DMPE funding from $20 million to $5.3 million. This was accomplished by eliminating automatic test equipment peculiar to the AH-64, the transmission test stand, and the airframe alignment tool.

Army correspondence indicated that the test equipment capability was eliminated because the project manager's office stated that the test equipment was not needed at Corpus Christi. Army personnel indicated that the funding was used to procure aircraft. The project manager's office stated that if DESCOM thought that the automatic test equipment was required, DESCOM could fund it.

The transmission test stand has subsequently been funded and is on contract, but won't be delivered until FY 1991. The projected date for transition to organic support of the transmission test stand is 1993. DESCOM requested funding for the airframe alignment tool in 1989.

We could not determine the time that was lost or the exact impact that the redirection and elimination of funding had on the schedule for transitioning the AH-64 into the organic depot. However, Army officials indicated that reductions in funding such as the one described above contributed to the delays in establishing organic support for the aircraft.

Navy F/A-18

Technical Data and Test Equipment. The Navy's inability to obtain technical data and test equipment was frequently cited in the Navy's F/A-18 Depot Transition Index (see Finding) as the reason the repair of an F/A-18 component had not transitioned to the organic depot. We examined 30 parts listed in the Index to determine the reason for the late delivery of the data and equipment. Contractual problems, lack of funding, and numerous component changes were the principal causes of the delays.

Exploring the extent of the problems the Navy had in contracting for support equipment was beyond the scope of our audit. However, we noted 1 particular problem that affected 6 of the 30 parts we reviewed.

The Navy completed the development and procurement of Lot VI of the F/A-18 Test Program Sets (TPS) in accordance with the provisions of the Competition in Contracting Act. The Navy's contract for development of the Lot VI TPS required 3 years of negotiation and was further delayed when one of the contractors was absorbed by another contractor. At the time of the audit, the Navy was waiting for the TPS. Some of the components the TPS test have been operational for 8 years.

Configuration Changes. Navy personnel indicated that TPS are sometimes obsolete before they are used or can be used to test only a few components because technological improvements to components on the aircraft occur more rapidly than development of the TPS. We were shown an example of one TPS that had changed five times in the last 4 years. At the time of the audit, the Navy was waiting on the latest version of the TPS. Cognizant Navy personnel indicated that there were numerous other examples of rapidly changing TPS' that delayed the Navy's ability to establish capability.

Technological improvements were not the only causes of design changes. We found 1 component, a cooling fan, in the sample of 30 components that was not properly designed and did not work. The design of the cooling fan had changed seven times since first produced. Once reconfigured, the item required special tooling to be repaired. The instability of the design caused the Navy to delay attempts to repair it organically. The Navy did not want to purchase expensive test equipment unless design stabilized.

Funding. Navy officials stated that funding shortfalls were one of the principal contributing factors to slippage in the F/A-18's transition schedule. Although we did not perform a detailed audit of the funding problems encountered by the Navy for the F/A-18, we noted instances where funding problems affected the transition.

Our special report (no number assigned) on the "Audit of Financial and Program Management of the F/A-18 Program," April 14, 1983, indicated that the Naval Aviation Systems Command realigned funds from other budgeted F/A-18 items including support items (such as TPS) to cover cost growth on the F/A-18 airframe. The report stated that the Command financed $46 million of airframe cost growth by shifting funds from the Publication and Technical Data and Integrated Logistics Support Lines to the airframe.

F/A-18 maintenance personnel indicated that the maintenance program was facing a reduction of about $108 million in the FY 1990 budget. The Navy was expecting to get some of the funding restored in 1990; however, any shortfall in the FY 1990 budget would become requirements in the follow-on years making those budgets more difficult to fund and would further delay the transition.

Air Force F-16

Technical Data and Test Equipment. The Air Force had difficulty obtaining technical data and test equipment to establish organic support for its weapon systems. Other audits have shown that the untimely delivery of technical data and test equipment had contributed to slippages in the transition to organic support. For example, the General Accounting Office reported in its Report No. GAO/NSIAD 89-15 (OSD Case No. 7718), "Strategic Bombers, B-1B Maintenance Problems Impede its Operations," that delays in receiving technical data and test equipment were increasing the cost of interim contractor support.

OTHER FACTORS CONTRIBUTING TO THE DELAYS IN ESTABLISHING AND TRANSITIONING TO ORGANIC MAINTENANCE CAPABILITY (continued)

The F-16 had similar problems as the B-1B. The primary reason that the final 17 of the 1,150 F-16A/B components that were scheduled to transition to the organic depot were late, or had not transitioned, was a delay in delivery of technical data and test equipment. Delivery of the technical data and test equipment was adversely affected by changes in design of the components, as discussed below.

Configuration Changes. Air Force personnel indicated that the most significant cause of the delay in transitioning to organic maintenance was the changing configuration of the weapon system. Air Force records showed that the F-16 aircraft had 30,612 engineering change proposals during its 10 years in service. In contrast, the F-4 aircraft experienced 608 engineering change proposals in 31 years.

The Air Force showed us components that have had numerous design changes and whose transition schedules have slipped because of those changes. The following sample of components shows delays in transitioning into the organic depot because of changes in design.

Items Transitioning Late as of December 14, 1989

Component	Number of Years' Slippage
14 ABC Pilot Stick Transducer	6
74 BAD HUD Circuit Card Assembly	3
74 BCU HUD Circuit Card Assembly	3
74 ADZ Digital Signal Processor	2

The pilot stick transducer had changed configuration seven times since it was first introduced. As of the time of the audit, the support equipment no longer fit the item.

The support equipment and software for the 74 BAD HUD circuit card assembly required changes because the equipment and software did not work.

A process was developed to test the 74 BCU HUD circuit card assembly. However, further design modifications changed the parts on the card. As a result, the test procedure must be rebuilt. The rebuild is expected to cause further delays in transitioning maintenance of the component to organic support.

Funding. The Air Force informed us that transfers of funds from procurement of support equipment to procurement of aircraft also caused delays in the transition. According to Air Force personnel at Hill Air Force Base, $300 million had been transferred from the F-16 contract during early production of the weapon system and were used to fund other systems.

We were unable to confirm this statement. However, Air Force Systems Command Regulation 550-15, "Fielding Supported Weapon Systems," August 2, 1988, stated that due to constraints in funding or success-oriented schedules, the Air Force had delayed supportability in order to put "rubber on the ramp." Air Force management indicated it would no longer make that trade off and would no longer sanction those decisions.

Conclusions

The Military Departments experienced difficulty transferring their weapon systems to organic support on the planned dates. Some of the causes of the delays (design changes and contractual problems) were difficult to plan and control. The procurement of the most technologically advanced weapon system has historically had a higher priority than acquisition of the logistics to support it. Freezing design to allow logistics to catch up has not been an acceptable solution. Also, the requirement to introduce competition into contracting has forced the Military Departments to split the procurement of many logistics items among different vendors and forced competing manufacturers to work together to develop and produce support items. The reluctance to share the knowledge that could provide a competitor an advantage and the lack of accountability that occurs when things go wrong add to delays in transitioning. In addition to the above problems, the starting and stopping of weapon systems by Congress confounds the difficult job of planning support.

Actions are ongoing in OSD and the Military Departments to find new ways of improving the logistics process and reduce its costs. However, as shown in the Finding, each Military Department could improve the transition from contractor to organic support by properly planning the transition during the system's development and by monitoring the transition until it is completed.

ELAPSED TIME TO TRANSITION THE AH-64 AIRCRAFT'S COMPONENTS TO ORGANIC DEPOT MAINTENANCE

Component	1984-1985 No. of Subsystems	1986-1988 No. of Subsystems	1989-1990 No. of Subsystems	1991-1994 No. of Subsystems	Totals
Basic Aircraft	0	0	0	44	44
Propulsion	0	1	0	71	72
Utilities	0	0	0	142	142
Instrumentation	0	0	0	14	14
Communication	0	0	0	8	8
Navigation	0	0	0	4	4
Totals	0	1	0	283	284
Percent*	0	1	0	99	100

* Percent of subsystems that transitioned during the stated time period.

ELAPSED TIME TO TRANSITION LOTS III THROUGH VI OF THE F/A-18 AIRCRAFT TO ORGANIC DEPOT MAINTENANCE

Component	1982-1984 No. of Subsystems	1985-1986 No. of Subsystems	1987-1989 No. of Subsystems	1990-1993 No. of Subsystems	Totals
Basic Aircraft	17	236	102	188	543
Propulsion 1/	0	0	0	0	0
Utilities	19	35	74	67	195
Instrumentation	3	0	3	6	12
Communication	0	0	5	23	28
Navigation	12	9	39	125	185
Totals	51	280	223	409	963
Percent 2/	5	29	23	43	100

1/ Data on propulsion not obtained.

2/ Percent of subsystems that transitioned during the stated time period.

ELAPSED TIME TO TRANSITION THE F-16A/B AIRCRAFT COMPONENTS TO ORGANIC DEPOT MAINTENANCE

Component	1979-1981 No. of Subsystems	1982-1983 No. of Subsystems	1984-1986 No. of Subsystems	1987-1989 No. of Subsystems	1990-1991 No. of Subsystems	Totals
Basic Aircraft	49	126	128	124	3	430
Propulsion	2	10	14	33	0	59
Utilities	25	46	17	42	0	130
Instrumentation	20	17	1	5	0	43
Communication	7	1	0	6	0	14
Navigation	55	228	94	94	3	474
Totals	158	428	254	304	6	1,150
Percent*	14	38	22	25	1	100

* Percent of such systems that transitioned during the stated time period.

COMPARISON OF THE COST TO PERFORM REPAIRS ON THE F-16A/B COMPONENTS BY THE CONTRACTOR TO THE ORGANIC COST*

Nomenclature	Quantity Repaired	Contractor Cost	Organic Cost	Cost Difference
Computer	4	$ 42,952	$ 3,592	$ 39,360
Actuator	1	1,384	797	587
Electrical Component	135	150,960	113,130	37,830
Fuel Tank	1	2,419	1,034	1,385
Fire Control	7	50,705	5,706	44,999
Power Supply	4	2,030	1,384	646
Indicator Angle of Attack	1	807	580	227
Sampled Data Assembly	109	184,370	132,871	51,499
Low Noise Assembly	22	85,130	23,672	61,458
Transmitter Radar	71	452,239	147,467	304,772
Protection Control	4	5,862	2,872	2,990
Missile Launch	46	125,648	31,372	94,276
Actuator	54	102,622	102,708	(86)
Panel Dispenser	1	859	489	370
Antenna	148	615,998	452,436	163,562

COMPARISON OF THE COST TO PERFORM REPAIRS ON F-16A/B COMPONENTS BY THE CONTRACTOR TO THE ORGANIC COST (continued)*

Nomenclature	Quantity Repaired	Contractor Cost	Organic Cost	Cost Difference
Radar Antenna	63	$ 257,255	$ 192,591	$ 64,664
Digibus Assembly	1	1,809	1,491	318
Pressure Vessel	225	944,975	1,043,325	(98,350)
Canopy	24	184,217	45,264	138,953
Manifold Assembly	5	5,671	4,370	1,301
Circuit Card	21	16,535	16,233	302
Circuit Card	15	11,431	9,975	1,456
Generator	2	1,856	1,252	604
Computer	8	22,988	15,904	7,084
Peak Power	5	9,185	2,600	6,585
Totals	977	$3,279,907	$2,353,115	$926,792

* Both the organic depot and the contractors repaired these components during FY 1989. The Air Force used contractors when the volume of components requiring repair exceeded the capacity of the organic depot.

DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR LOGISTICS
WASHINGTON, DC 20310-0500

02 JUL 1990

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CCL MCCOY/EXECUTIVE/79039 5 JUL 1990

MEMORANDUM THRU ~~DEPUTY CHIEF OF STAFF FOR LOGISTICS~~
~~DIRECTOR OF THE ARMY~~ STAFF JOSEPH P. DONNELLY, LTC, GS, ADAS 7/6/90
ASSISTANT SECRETARY ~~OF THE~~ ARMY (INSTALLATIONS,
LOGISTICS AND ENVIRONMENT) 7/19/90
Eric A. Orsini
Deputy Assistant Secretary of the Army
(Logistics)

FOR ASSISTANT INSPECTOR GENERAL FOR FOLLOWUP, DEPARTMENT OF DEFENSE

SUBJECT: Report on the Audit of Phased Organic Depot Maintenance of Aviation Weapon Systems (Project No. 9SA-5011)--INFORMATION MEMORANDUM

1. This replies to your memorandum of 16 May 1990, subject as above (Tab A).

2. Generally concur with the recommendations and findings contained in the draft report. Detailed comments on each finding and recommendation are at Tab B.

2 Encls

WILLIAM P. NEAL
Acting Director of Supply
and Maintenance

CF: SAIG-PA

Mr. Maxfield/54151

RECOMMENDATIONS FOR CORRECTIVE ACTION

1. We recommend that the Commander, U.S. Army Materiel Command:

a. Enforce the requirement that Materiel Fielding Plans and Depot Maintenance Support Plans be prepared by program managers during development of each Army aviation weapon system and that the Materiel Fielding Plans include plans to transition from contractor to organic support.

Comment. - Concur. AR 700-127 and AR 700-142 now contain the policy. Problem is one of enforcement. The U.S. Army Materiel Command Major Subordinate Commands can enforce policy by raising the flag to their commanders who should resolve the issue with Program Executive Officer/Program Manager. The issue can be raised to the Commanding General, U.S. Army Materiel Command/Army Acquisition Executive level if necessary. However, most Integrated Logistic Support managers, and other functional managers, perceive that the Program Managers make the decision and there is nothing they can do about it. The U.S. Army Materiel Command Major Subordinate Commands prepare the Materiel Fielding Plans and Depot Maintenance Support Plans for the Program Executive Officers and Program Managers as a part of the functional support they provide. A DCSLOG policy letter, reiterating the necessity for Materiel Fielding Plans and Depot Maintenance Support Plans, will be sent by August 1990.

b. Enforce the requirement that Army Maintenance offices update Depot Maintenance Support Plans to provide the most current transition plan to Army component participating in the transition of the aviation weapon system.

Comment. - Concur. However, statement is in error. Integrated Logistics Support offices are responsible for preparing the Depot Maintenance Support Plans, not the Maintenance offices. The plans are coordinated with Maintenance and other offices. The Army is currently in the process of finalizing a DA Pamphlet on the Depot Maintenance Support Plan. It should aid the Army in getting properly prepared plans as it provides format, content and procedures. A Depot Maintenance Support Plan prepared in accordance with the Pamphlet will meet DESCOM's needs. Publication is planned for December 1990.

SUMMARY OF POTENTIAL MONETARY AND OTHER BENEFITS RESULTING FROM AUDIT

Recommendation Reference	Description of Benefits	Amount and/or Type of Benefit
1. 2. and 3.	Economy and Efficiency. The Military Departments will be able to reduce operations and maintenance costs by improving the planning of the transition from contractor to organic depot maintenance.	Undeterminable. Benefits would occur on future systems and cannot be quantified at this time. The cost of organic versus contractor depot maintenance of future weapon systems could not be determined by this audit.

ACTIVITIES VISITED OR CONTACTED

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Deputy Assistant Secretary Of Defense (Logistics), Office Of The Assistant Secretary Of Defense (Production And Logistics), Washington, DC

Army

Army Chief of Staff for Logistics, Office of the Deputy Chief of Staff for Logistics, Washington, DC
Headquarter, U.S. Army Materiel Command, Alexandria, VA
U.S. Army Depot System Command, Chambersburg, PA
U.S. Army Aviation Systems Command, St. Louis, MO
U.S. Army Depot, Corpus Christi, TX

Navy

Chief of Naval Operations, Washington, DC
Naval Air Systems Command, Arlington, VA
Naval Aviation Supply Office, Philadelphia, PA
Naval Aviation Depot, North Island, CA
Naval Air Station, Lemoore, CA
Naval Aviation Depot Operations Center, Patuxent River, MD

Air Force

Headquarters, Air Force Systems Command, Andrews Air Force Base, MD
Aeronautical Systems Division, Air Force Systems Command, Wright Patterson AFB, OH
Headquarters, Air Force Logistics Command, Wright Patterson AFB, OH
Ogden Air Logistics Center, Hill AFB, UT
Air Force Plant Representative Office, General Dynamics, Fort Worth Division, TX

Other

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Martin Marietta Corporation, Orlando, FL
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Senate Committee on Armed Services
Senate Committee on Governmental Affairs
Senate Ranking Minority Member, Committee on Armed Services
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
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House Subcommittee on Legislation and National Security, Committee on Government Operations