Audit Report

OFFICE OF THE INSPECTOR GENERAL

EFFECTIVENESS OF THE AIR FORCE'S INTERNAL CONTROLS OVER THE DEVELOPMENT AND ACQUISITION OF MAINTENANCE AND DIAGNOSTIC SYSTEMS

Report Number 92-037 January 23, 1992

Department of Defense

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

January 23, 1992

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

SUBJECT: Audit Report on the Effectiveness of the Air Force's Internal Controls Over the Development and Acquisition of Maintenance and Diagnostic Systems (Report No. 92-037)

We are providing this final report for your information and use. It addresses matters concerning the effectiveness of the Air Force's principle program for monitoring the development and acquisition of maintenance and diagnostic systems, the Air Force's Modular Automatic Test Equipment (MATE) Program. This audit was part of a larger DoD-wide audit concerning the development and acquisition of DoD maintenance and diagnostic systems. Matters relating to the Army, the Navy, and overall DoD management of the development and acquisition of maintenance and diagnostic systems are presented in separate audit reports.

A draft of this report was provided to the addressee for comments on October 7, 1991. As of January 17, 1992, no comments were received. DoD Directive 7650.3 requires that all audit recommendations be resolved promptly. Therefore, we request that the Assistant Secretary of the Air Force (Financial Management and Comptroller) provide comments to the final report by March 23, 1992. As required by DoD Directive 7650.3, the comments should indicate concurrence or nonconcurrence with the finding and the recommendations. 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. This report identifies no quantifiable monetary benefits. Recommendations are subject to resolution in accordance with DoD Directive 7650.3 in the event of nonconcurrence or failure to comment.

We also ask that your comments indicate concurrence or nonconcurrence with the internal control weaknesses highlighted in Part I. See the "Status of Recommendations" section at the end of the finding for the specific requirements for your comments.

The courtesies extended to the audit staff are appreciated. If you have any questions on this audit, please contact Mr. Dennis Payne at (703) 614-6227 (DSN 224-6227) or Mr. Tilghman Schraden at (703) 693-0624 (DSN 223-0624). The distribution of this report is listed in Appendix C.

Ed Jones

Edward R. Jones
Deputy Assistant Inspector General
for Auditing

Enclosure

cc:
Secretary of the Air Force
Assistant Secretary of Defense (Production and Logistics)

Office of the Inspector General, DoD

AUDIT REPORT NO. 92-037 **January 23, 1992**
(Project No. 0LB-0087.03)

EFFECTIVENESS OF THE AIR FORCE'S INTERNAL CONTROLS OVER THE DEVELOPMENT AND ACQUISITION OF MAINTENANCE AND DIAGNOSTIC SYSTEMS

EXECUTIVE SUMMARY

Introduction. As part of our DoD-wide Audit of the Development and Acquisition of DoD Maintenance and Diagnostic Systems, we evaluated the effectiveness of the Air Force's principle program for monitoring the development and acquisition of maintenance and diagnostic systems, the Modular Automatic Test Equipment (MATE) Program. This report addresses the results of this part of the audit. The Air Force established the MATE Program in 1976 to help reduce the proliferation of automatic test equipment. This reduction was to be accomplished by limiting the need to develop unique test equipment for Air Force weapon systems by providing a set of standardized procedures, software, and tools for Air Force activities to use in developing automatic test equipment. The MATE Program was determined to be ineffective during the audit and was being replaced by a new program.

Objectives. Our audit objectives were to evaluate the effectiveness of the Air Force's internal controls over the development and acquisition of maintenance and diagnostic systems.

Audit Results. Air Force Systems Command's product divisions and Air Force Logistics Command's logistics centers were not complying with Air Force guidance for acquiring standardized automatic test equipment. As a result, there was continued proliferation of equipment and no assurance that the Air Force was acquiring automatic test equipment cost-effectively.

Internal Controls. Material internal control weaknesses are described in the Finding. Additional details are provided in the Internal Controls section of Part I of this report.

Potential Benefits of Audit. Implementation of the report's recommendations should result in the Air Force reducing acquisition and development costs by acquiring standardized automatic test equipment. We were not able to quantify the monetary benefits. Additional details are included in Appendix A.

Summary of Recommendations. We recommended that the Air Force develop and implement an effective internal control management system for monitoring the development and acquisition of automatic test equipment.

Management Comments. No comments were received in response to the draft report issued on October 7, 1991. Comments are requested from the Assistant Secretary of the Air Force (Financial Management and Comptroller) by March 23, 1992.

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This report was prepared by the Logistics Support Directorate, Office of the Assistant Inspector General for Auditing, DoD. Copies of the report can be obtained from the Information Officer, Audit Planning and Technical Support Directorate, (703) 693-0340.

PART I - INTRODUCTION

Background

Modular Automatic Test Equipment (MATE) Program. As part of our DoD-wide Audit of the Development and Acquisition of DoD Maintenance and Diagnostic Systems, we evaluated the effectiveness of the Air Force's principle program for monitoring the development and acquisition of maintenance and diagnostic systems, the MATE Program. This report addresses the results of this part of the audit. The Air Force established the MATE Program in 1976 to help reduce the proliferation of automatic test equipment. This reduction was to be accomplished by limiting the need to develop unique test equipment for Air Force weapon systems by providing a set of standardized procedures, software, and tools for Air Force activities to use in developing automatic test equipment. The budget for operation of the MATE Program in FY 1991 was $12.8 million. No funding was provided for FY 1992.

Organization. During our audit, there were two MATE Program offices. The MATE Program office for the Air Force Systems Command was located at Wright-Patterson Air Force Base, Ohio, and the MATE Program office for the Air Force Logistics Command was located at the San Antonio Air Logistics Center, Texas. MATE system focal points were designated at Air Force Systems Command's product divisions and Air Force Logistics Command's logistics centers to facilitate the implementation of the MATE Program.

Objectives

Our audit objectives were to evaluate the effectiveness of the Air Force's internal controls over the development and acquisition of maintenance and diagnostic systems.

Scope

Review of guidance. We reviewed the Air Force's guidance on maintenance and diagnostic systems to determine if the policies and procedures for procuring maintenance and diagnostic systems were adequate. This included guidance for the operations of the principle program established by the Air Force to monitor the development and acquisition of maintenance and diagnostic systems, the MATE Program.

Review of MATE Program operations. We reviewed the operations of the Air Force's Modular Automatic Test Equipment Technical Control Agents (MATE Program offices) covering primarily the period from January 1988 to April 1991. Additionally, we reviewed program documentation relating to the development and acquisition of test equipment at two Air Force Systems Command's product divisions and two Air Force Logistics Command's logistics centers. This documentation covered test

equipment requirements for the period from approximately January 1985 through February 1991 for 37 weapon system programs. This review was to determine if acquisitions of automatic test equipment complied with MATE Program requirements and to assess the effectiveness of the MATE Program. The documentation examined included applicable cost analyses, procurement plans, and contracting actions for automatic test equipment.

Auditing standards. This economy and efficiency audit was made from September 1990 through August 1991 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. Activities visited or contacted during the audit are listed in Appendix B.

Internal Controls

Controls assessed. We evaluated internal controls associated with the implementation of MATE Program guidance. This included an evaluation of whether controls were sufficient to ensure that acquisitions of automatic test equipment were properly justified and cost-effective.

Internal Control Weaknesses. The audit identified material 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 effective to ensure that automatic test equipment acquired for Air Force weapon systems was properly justified and cost-effective. These internal control weaknesses are discussed in detail in Part II of this report. Recommendations 1. and 3. in this report, if implemented, will assist in correcting these weaknesses. We could not quantify the monetary benefits to be realized from implementing the recommendations. However, the Air Force estimated that effective operations of its MATE Program could have produced average savings of $16 million for each automatic test system developed through MATE Program procedures. Although we were unable to verify this estimate, we agree that substantial savings can be achieved by developing and implementing an effective internal control management system for monitoring and approving the development and acquisition of automatic test equipment. A copy of this report will be provided to the senior official responsible for internal controls within the Air Force.

Prior Audits and Other Reviews

There has not been any coverage of the development and acquisition of maintenance and diagnostic systems in the Air Force during the last 5 years.

PART II - FINDING AND RECOMMENDATIONS

ACQUISITION OF AUTOMATIC TEST EQUIPMENT

Air Force Systems Command's product divisions and Air Force Logistics Command's logistics centers were not complying with Air Force guidance for acquiring standardized automatic test equipment. This condition occurred because the Air Force did not have an effective management system for monitoring the development and acquisition of automatic test equipment. As a result, there was continued proliferation of equipment and no assurance that the Air Force was acquiring automatic test equipment cost-effectively.

DISCUSSION OF DETAILS

Background

Guidance on the operations of the Air Force MATE Program is contained in Joint Air Force Systems Command and Air Force Logistics Command Regulation 800-23, "Policy for Modular Automatic Test Equipment," January 25, 1984. The regulation requires all Air Force organizations planning to acquire automatic test equipment to use the MATE Program's standardized procedures, software, and tools. The MATE Program offices are to grant waivers to MATE Program requirements only when the acquiring organization can demonstrate that the MATE Program is not technically practical or cost-effective.

Management of the Modular Automatic Test Equipment Program

The Air Force has not effectively monitored the development and acquisition of automatic test equipment because of deficiencies in the management of the MATE Program.

Management records. As a result of internal control weaknesses, records supporting the operation of the MATE Program were incomplete. Although the MATE Program has been in existence for 15 years, no records or assurances were provided by officials at the MATE Program offices that would demonstrate that all automatic test equipment supporting Air Force weapon system programs were either developed and acquired through use of MATE Program procedures or were properly waived from these procedures.

Contracting controls. Program managers for 11 of the 37 weapon system programs reviewed were acquiring automatic test equipment without the required MATE Program approvals or waivers. There were no internal control procedures in place to preclude contracts from being awarded without the required MATE Program approvals or waivers. This internal control deficiency was illustrated by the planned acquisition of automatic test equipment for the AC 130U gunship. The weapon system program manager initially recommended acquisition of a MATE-approved

automatic test equipment system that would cost an estimated $21 million over its life cycle. However, at the time of audit, the program manager was procuring a different automatic test equipment system that had an estimated life cycle cost of $29 million. No request had been made for either MATE Program approval of this more expensive test system or a waiver of MATE Program requirements.

Data base. The data base used by the MATE Program offices to monitor compliance with MATE Program requirements was inaccurate and incomplete. It did not include a complete and accurate listing of the status of all automatic test equipment under development, being procured, or in the existing inventory within the Air Force.

Accuracy. Of the 37 weapon system programs reviewed, 5 programs, listed in the January 18, 1991, MATE Program data base as having requirements for MATE Program reviews, had no requirements for automatic test equipment. The weapon system program managers for these five weapon systems were planning to acquire primarily manual test equipment, which is not covered by the MATE Program.

Updates. The status of many planned acquisitions of automatic test equipment included in the January 18, 1991, data base had not been updated for several years. For example, the data base showed that a waiver request for the acquisition of F-15 New Technology Test Sets had been returned to the F-15 System Program Office on January 30, 1985, for additional information. As of January 18, 1991, the status had not been updated. Apparently no followup actions were conducted during this 6-year period. The Deputy Director for Acquisitions in the F-15 System Program Office advised us that no F-15 New Technology Test Sets had been procured and none were planned for procurement under that name. He did not know whether the sets might have been procured under another name.

Incomplete. Weapon system programs with planned acquisitions of automatic test equipment that required MATE Program reviews were not included in the data base. For example, the data base did not reflect any requirements for analog test sets for the F-16 aircraft program. In November 1990, a contract was awarded to procure four analog test sets valued at $8.6 million for the F-16 aircraft program. No MATE Program review was conducted of this automatic test equipment to determine whether this proliferation of automatic test equipment was justified and cost-effective.

Reasons for Noncompliance. Weapon system program managers cited several reasons for not complying with MATE Program requirements. The cited reasons included the following.

o Program managers were unaware that the MATE Program existed.

o Outdated MATE Program software was too restrictive and too slow for the newer technology used in weapon systems.

o Delays in processing MATE applications affected weapon system program managers' ability to meet acquisition milestones.

Cancellation of MATE Program

The deficiencies in the MATE Program have been recognized. The Deputy Secretary of Defense eliminated funding of the MATE Program for FY 1992. The Deputy Assistant Secretary of the Air Force (Communications, Computers and Logistics), in recognition of the need for effective controls over automatic test equipment, established a tiger team to evaluate how the integrated diagnostic needs of the Air Force could best be addressed. Based on the results of this evaluation, on April 22, 1991, the Deputy Assistant Secretary decided to cancel the MATE Program and to use manpower resources from the MATE Program to support the development and implementation of the Air Force Centralized Integrated Diagnostics Program. The Air Force expects this replacement program to address all aspects of integrated diagnostics, including automatic test equipment standardization that was served by the MATE Program.

Use of Standard Automatic Test Equipment Developed by the Army and Navy

Both the Army and the Navy have made substantial investments in the development of standard automatic test equipment. The standard automatic test equipment developed under the Army's Integrated Family of Test Equipment Program and the Navy's Consolidated Automated Support System Program are adaptable for use for electronic maintenance of several weapon systems, including Air Force weapon systems. The Air Force has not performed a comprehensive assessment of the potential for use of this standard automatic test equipment.

Conclusion

The need for the Air Force to include effective internal control management procedures in its new program is reflected by the Air Force's estimate that effective operations of its MATE Program could have produced average savings of $16 million for each automatic test system developed through MATE Program procedures. Although we were unable to verify this estimate, we agree that substantial savings can be achieved by developing and implementing an effective internal control management system for monitoring and approving the development and acquisition of automatic test equipment. This replacement program needs to give full consideration to the potential savings that can be achieved from acquiring standard automatic test equipment already developed under the Army's Integrated Family of Test Equipment Program and the Navy's Consolidated Automated Support System

Program in lieu of developing new automatic test equipment. There is no specific requirement for the Air Force to evaluate the use of this standard automatic test equipment prior to making a decision to develop new automatic test equipment. However, the Air Force should avoid approving the development of new automatic test equipment until an assessment is made to determine if existing Army and Navy standard automatic test equipment can cost-effectively meet the Air Force's needs.

RECOMMENDATIONS FOR CORRECTIVE ACTIONS

We recommend that the Assistant Secretary of the Air Force (Acquisitions):

1. Develop and implement an effective internal control management system for monitoring and approving the development and acquisition of automatic test equipment within the Air Force. This management system should include a data base of all automatic test equipment under development, being procured, or in the existing inventory. Additionally, the official assigned responsibility for the management system should have sufficient authority to prevent contracts from being awarded for unapproved automatic test equipment.

2. Require that developments of new automatic test equipment be approved only when it can be demonstrated that it would not be cost effective to acquire the standard automatic test equipment developed under the Army's Integrated Family of Test Equipment Program and the Navy's Consolidated Automated Support System Program.

3. Report and track the material weaknesses related to the control of acquisitions of standardized automatic test equipment, as required by DoD Directive 5010.38, "Internal Management Control Program."

MANAGEMENT COMMENTS AND AUDIT RESPONSE

Management comments were requested from the Assistant Secretary of the Air Force (Financial Management and Comptroller) on October 7, 1991. As of January 17, 1992, no comments were received. Therefore, we request comments from the Assistant Secretary of the Air Force by March 23, 1992.

STATUS OF RECOMMENDATIONS

		Response Should Cover:			
Number	Addressee	Concur/ Nonconcur	Proposed Action	Completion Date	Related Issues*
1.	Air Force	X	X	X	IC
2.	Air Force	X	X	X	
3.	Air Force	X	X	X	IC

IC = internal control weakness

PART III - ADDITIONAL INFORMATION

APPENDIX A - Summary of Potential Monetary and Other Benefits Resulting from Audit

APPENDIX B - Activities Visited or Contacted

APPENDIX C - Report Distribution

APPENDIX A: SUMMARY OF POTENTIAL MONETARY AND OTHER BENEFITS RESULTING FROM AUDIT

Recommendation Reference	Description of Benefit	Type of Benefit
1.	Economy and Efficiency. Air Force will develop a management system to monitor the development and acquisition of automatic test equipment.	Nonquantifiable. Air Force had an inadequate data base for determining cost savings on standardized automatic test equipment.
2.	Economy and Efficiency. Air Force will reduce the cost of developing new automatic test equipment by acquiring standard equipment developed by the Army and Navy.	Nonquantifiable. Air Force had an inadequate data base for determining cost savings on standardized automatic test equipment.
3.	Internal Control. Helps ensure implementation of Recommendation 1.	Nonmonetary.

APPENDIX B: ACTIVITIES VISITED OR CONTACTED

Office of the Secretary of Defense

Deputy Assistant Secretary of Defense (Logistics), Office of the Assistant Secretary of Defense (Production and Logistics), Washington, DC

Department of the Air Force

Office of the Deputy Chief of Staff for Logistics and Engineering, Washington, DC
Air Force Logistics Command, Wright-Patterson Air Force Base, OH
Air Force Systems Command, Andrews Air Force Base, MD
San Antonio Air Logistics Center, Kelly Air Force Base, TX
Warner Robins Air Logistics Center, Robins Air Force Base, GA
Air Force Aeronautical Systems Division, Wright-Patterson Air Force Base, OH
Air Force Electronic Systems Division, Hanscom Air Force Base, MA

Non-DoD Activities

SOFTECH Corporation, Dayton, OH

APPENDIX C: REPORT DISTRIBUTION

Office of the Secretary of Defense

Assistant Secretary of Defense (Production and Logistics)
Assistant Secretary of Defense (Public Affairs)
Comptroller of the Department of Defense

Department of the Air Force

Secretary of the Air Force
Assistant Secretary of the Air Force (Financial Management and Comptroller)
Air Force Audit Agency

Defense Agencies

Director, Defense Contract Audit Agency
Director, Defense Logistics Agency
Director, Defense Logistics Studies Information Exchange

Non-DoD Activities

Office of Management and Budget
National Security Division, Special Projects Branch
U.S. General Accounting Office
NSIAD Technical Information Center

Congressional Committees:

Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Government Affairs
Senate Ranking Minority Member, Committee on Armed Services
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Ranking Minority Member, Committee on Appropriations
House Committee on Armed Services
House Committee on Government Operations
House Subcommittee on Legislation and National Security, Committee on Government Operations

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