Audit Report

OFFICE OF THE INSPECTOR GENERAL

DEVELOPMENT AND ACQUISITION OF DOD MAINTENANCE AND DIAGNOSTIC SYSTEMS-NAVY

Report Number 92-022 December 17, 1991

Department of Defense

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

December 17, 1991

MEMORANDUM FOR ASSISTANT SECRETARY OF THE NAVY (FINANCIAL MANAGEMENT)

SUBJECT: Audit Report on the Development and Acquisition of DoD Maintenance and Diagnostic Systems-Navy (Report No. 91-022)

We are providing this final report for your information and use. It addresses matters concerning the acquisition and distribution of test equipment by the Navy.

A draft of this report was provided to the addressee for comments on September 6, 1991. As of December 11, 1991, 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 Navy (Financial Management) provide comments to the final report by February 18, 1992. As required by DoD Directive 7650.3, the comments should indicate concurrence or nonconcurrence with the finding and 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.

If you nonconcur with the estimated monetary benefits or any part thereof, you must state the amount you nonconcur with and the basis for your nonconcurrence. Recommendations and potential monetary benefits 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.

Edward R. Jones
Deputy Assistant Inspector General
for Auditing

Enclosure

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

Office of the Inspector General, DoD

AUDIT REPORT NO. 92-022 **December 17, 1991**
(Project No. 0LB-0087.02)

DEVELOPMENT AND ACQUISITION OF DOD MAINTENANCE AND DIAGNOSTIC SYSTEMS-NAVY

EXECUTIVE SUMMARY

Introduction. The Consolidated Automated Support System Program was initiated by the Navy to reduce the proliferation of unique automatic test equipment being procured for each of the Navy's weapon systems. In 1985, the Secretary of the Navy designated Consolidated Automated Support System equipment as the standard automatic test equipment for intermediate and depot level electronic maintenance throughout the Navy. The Navy plans to spend $2.5 billion to transition to the new standard equipment.

Objectives. Our audit objectives were to evaluate the compatibility, cost, performance, and other characteristics of various maintenance test and diagnostic systems being procured or scheduled for procurement. Special emphasis was placed on evaluating the plans for transitioning to the Consolidated Automated Support System test equipment.

Audit Results. The Navy's plans for transitioning to the standard automatic test equipment developed under its Consolidated Automated Support System Program have not been fully effective. As a result, potential savings opportunities have been missed because workload and economic analyses were not performed by several Navy activities to determine if it was feasible and economical to transition from existing test equipment for their weapon systems to Consolidated Automated Support System test equipment. In addition, where analyses have been performed, requirements have been overstated.

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

Potential Benefits of Audit. We estimate that savings over the 6-year Future Years Defense Program from implementing the report's recommendations are at least $30.4 million. Additional details are included in Appendix B.

Summary of Recommendations. We recommended that the Navy develop an effective internal control management system to monitor the Navy-wide development, acquisition, and distribution of test, measurement, and diagnostic equipment. We also recommended that the Navy reduce its requirements for Consolidated Automated Support Systems.

Management Comments. No comments were received in response to the draft report issued on September 6, 1991. Comments are requested from the Assistant Secretary of the Navy (Financial Management) by February 18, 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

The Consolidated Automated Support System Program was initiated by the Navy to reduce the proliferation of unique automatic test equipment being procured for each of the Navy's weapon systems. In 1985, the Secretary of the Navy designated the equipment developed under the Consolidated Automated Support System Program as the standard automatic test equipment for intermediate and depot level electronic maintenance throughout the Navy.

Acquisitions of the systems began in September 1990. At the time of audit, the Navy planned to procure 720 systems valued at $1.1 billion. Test program sets (primarily software) adapt the systems to the unique electronic testing requirements of each weapon system. The Navy planned to spend an additional $1.4 billion to acquire test program sets.

Objectives

Our audit objectives were to evaluate the compatibility, cost, performance, and other characteristics of various maintenance test and diagnostic systems being procured or scheduled for procurement, and to review the procurement justification for the systems and the need for multiple systems at the same installation. Because of related audit coverage by the Naval Audit Service (see Prior Audits and Other Reviews), we limited our review primarily to an evaluation of the adequacy of the Navy's plans for transitioning to the new standard test equipment developed under the Navy's Consolidated Automated Support System Program. We also evaluated applicable internal controls.

Scope

Review of activities and program offices. At 12 Navy activities, we reviewed program documentation on file concerning the activity's development, procurement, and utilization of maintenance and diagnostic systems for major weapon systems. The documentation covered the period May 1981 through May 1991. Special emphasis was placed on examining requirement documents, cost analyses, transition plans, procurement and contracting actions, accounting records, and program budgets for the Navy's Consolidated Automated Support System. We were unable to determine the universe of diagnostic and maintenance systems under development, being procured, or in the existing inventory because the Navy did not maintain a Navy-wide data base.

Review of guidance. We also reviewed the adequacy of Navy guidance concerning responsibilities for managing the acquisition of automatic test equipment.

Engineering specialists. Engineering specialists from the Office of the Inspector General, DoD, assisted the auditors in evaluating the compatibility and performance of maintenance and diagnostic systems. This was accomplished by analyzing requirement documents, system specifications, test results, cost analyses, operational concepts, system operating manuals, and other program documents.

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 the internal controls associated with the implementation of guidance, accuracy and validity of requirements, adequacy of workload and economic analyses, completeness and appropriateness of transition plans, and justification of procurement actions for test, measurement, and diagnostic equipment.

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 Navy maintenance and diagnostic systems for its weapon systems were properly justified and acquired. These material internal control weaknesses are discussed in detail in Part II of this report. All recommendations in this report, if implemented, will assist in correcting these weaknesses. As detailed in Appendix A, we have estimated that the monetary benefits that can be realized by implementing the recommendations are at least $30.4 million over the 6-year Future Years Defense Program. A copy of this report will be provided to the senior official responsible for internal controls within the Navy.

Prior Audits and Other Reviews

Naval Audit Service Report No. 050-W-89, "Repair of Shipboard Electronics - Follow Up," May 1989. The report stated that the fleet did not fully utilize automatic test equipment to screen and repair electronic modules and printed circuit boards; that procedures for developing statements of work for test program set acquisitions did not minimize government risk and maximize contractor incentive; and that the Naval Sea Systems Command and Naval Air Systems Command were acquiring similar electronic test equipment that duplicated test equipment used to screen electronic modules for repair. The report recommended that the fleet better utilize the available automatic test equipment. The report also recommended that the Chief of Naval

Operations develop an instruction requiring that the acquisition of both test equipment and test program sets be combined and subject to the approval threshold requirements outlined in the Navy supplement to the Defense and Federal Acquisition Regulations. The Navy concurred with the recommendations and initiated corrective actions including issuing Secretary of the Navy Instruction 3960.6, "Navy Policy and Responsibility for Test, Measurement, Monitoring, Diagnostic Equipment and Systems, and Metrology and Calibration."

Navy Audit Service Report No. 028-C-89, "Management of the Support Equipment Program," April 1989. The report stated that inadequate management of support equipment inventory resulted in excess inventories, inaccurate inventory records, and invalid requisitions; that the Naval Air Systems Command procured unneeded contractor-recommended support equipment; and that the Naval Air Engineering Center was not adequately reviewing recommendations for peculiar support equipment to determine if the Navy could substitute or modify items already available. The Navy concurred with the findings and recommendations and initiated corrective actions to realign the support equipment assets.

PART II - FINDING AND RECOMMENDATIONS

TRANSITION TO THE CONSOLIDATED AUTOMATED SUPPORT SYSTEM

The Navy's plans for transitioning to the standard automatic test equipment developed under its Consolidated Automated Support System Program have not been fully effective. This condition occurred because of the lack of adequate coordination among the Naval systems commands to determine needs for Consolidated Automated Support System equipment, and because of inadequacies in the workload and economic analyses supporting planned acquisitions. The lack of an effective internal control management system for monitoring the development, acquisition, and distribution of test, measurement, and diagnostic equipment also contributed to this condition. As a result, potential savings opportunities have been missed because workload and economic analyses were not performed by several Navy activities to determine if it was feasible and economical to transition from existing test equipment for their weapon systems to Consolidated Automated Support System test equipment. In addition, for those Navy activities where workload and economic analyses have been performed, the summary requirements analysis prepared by the Naval Air Systems Command did not consider the potential for reusing systems that were planned to be used initially for test program set development. As a result, the 386 systems planned for deployment through FY 1995 were overstated by 22 systems, valued at $30.4 million.

DISCUSSION OF DETAILS

Background

In 1985, the Secretary of the Navy assigned responsibilities for Navy-wide implementation of the Consolidated Automated Support System Program to the Commander, Naval Air Systems Command. However, overall Navy-wide responsibilities for implementing test, measurement, and diagnostic equipment programs was assigned in December 1986 to the Commander, Naval Sea Systems Command. Secretary of the Navy Instruction 3960.6, "Department of the Navy Policy and Responsibility for Test, Measurement, Monitoring, Diagnostic Equipment and Systems, and Metrology and Calibration," October 12, 1990, retained these divided responsibilities. The instruction further clarified that it was the responsibility of each weapon system acquisition manager to study and determine if and when it was economically practical to transition from existing automatic test equipment to Consolidated Automated Support System equipment.

The transition plan developed by the Naval Air Systems Command was based on the following strategy.

- Weapon systems with initial operational capability dates in FY 1992 and beyond will be supported by the Consolidated Automated Support System.

o All existing electronic systems will be transitioned to the Consolidated Automated Support System as they are modified or upgraded.

o All electronic systems with an initial operational capability date of FY 1990 through FY 1992 will be interimly supported until fully supported by the Consolidated Automated Support System.

o Automatic test equipment that can no longer be economically supported will be replaced with the Consolidated Automated Support System based on fleet support priorities and economic analyses.

Transitioning Plans

The Navy did not fully implement its plan for transitioning to the standard automatic test equipment developed under its Consolidated Automated Support System Program. Although the Consolidated Automated Support System was intended for use throughout the Navy, as of March 1991, 96 percent of the requirements established for 720 Consolidated Automated Support Systems were for Naval Air Systems Command weapon systems. Only one Naval Sea Systems Command activity identified requirements for the system. The Space and Naval Warfare Systems Command identified only two weapon systems with requirements for the system.

Coordination. Although the Naval Air Systems Command, Naval Sea Systems Command, and Space and Naval Warfare Systems Command entered into a memorandum of agreement on April 9, 1986, requiring close coordination between the Naval systems commands in establishing requirements for Consolidated Automated Support System equipment, such coordination has been ineffective. This ineffective coordination was a principal cause of the low participation level by Navy activities outside the Naval Air Systems Command. The divided responsibilities between the Naval Sea Systems Command and Naval Air Systems Command for implementing test, measurement, and diagnostic equipment programs contributed to this lack of effective coordination. The Naval Air Systems Command did not contact weapon system acquisition managers outside the Naval Air Systems Command to determine if studies had been performed to determine whether it was economical to transition from existing automatic test equipment to Consolidated Automated Support System equipment. Although the Naval Sea Systems Command had overall Navy-wide responsibility for test, measurement, and diagnostic equipment programs, the Naval Sea Systems Command did not contact weapon system acquisition managers either Navy-wide or within the Naval Sea Systems Command to assess requirements for Consolidated Automated Support System equipment.

Management control system. The failure of the Naval Sea Systems Command, in its overall Navy-wide oversight role, to establish an effective Navy-wide internal control management system to monitor the development, acquisition, and distribution of test equipment also contributed to the low number of Navy activities outside the Naval Air Systems Command that identified a requirement for Consolidated Automated Support System equipment. If the Naval Sea Systems Command had maintained a Navy-wide data base on test, measurement, and diagnostic equipment (including test program sets) under development; being procured; or in the existing inventory, the Naval Air Systems Command would have been in a better position to assess the Navy-wide needs for Consolidated Automated Support System equipment.

As a result of ineffective coordination and the lack of an effective internal control management system, workload and economic analyses have not been performed by several Navy activities of their weapon systems to determine if it would be economical to transition from existing test equipment to Consolidated Automated Support System equipment. As a result, potential savings opportunities may have been missed.

The savings potential that could be achieved by all Navy activities performing workload and economic analyses of their weapon systems was illustrated by the analysis performed by the Naval Undersea Warfare Engineering Station, Keyport, Washington (the only Naval Sea Systems Command activity that identified requirements for the system as of March 1991). This analysis estimated that the station could save $1.7 million annually by replacing nine obsolete test equipment items with three Consolidated Automated Support Systems.

Establishment of Requirements

Plans. For those Navy activities that performed workload and economic analyses as of March 1991, the Naval Air Systems Command developed a requirement for 720 systems. This included 386 systems to be deployed through FY 1995--167 systems to develop test program sets and 219 systems for site activation at maintenance depots, intermediate maintenance activities, and Government contractors. Deployment plans for the remaining 334 systems were not completed at the time of audit.

Requirements overstated. In calculating the requirements, the potential for reusing Consolidated Automated Support Systems after test program sets were developed was not considered. As a result, the 386 systems planned for deployment through FY 1995 were overstated by 22 systems.

Example. The August 1991 requirements plan for the Naval Aviation Depot, Jacksonville, Florida, identified one Consolidated Automated Support System to develop test program sets for an electro-optical maintenance assembly on the

A-6 aircraft. The test program sets were scheduled to be completed by March 1994. The plan showed no use for this system after the development of the test program sets were completed. The plan showed, however, that the depot required another electro-optically configured Consolidated Automated Support System in June 1995 for support of the same A-6 maintenance assembly. Instead of acquiring a second system, the depot could save $2.5 million in procurement costs by reusing the Consolidated Automated Support System used for test program set development.

Savings potential. Similar conditions were found for 21 additional systems to be used for test program set development for 10 weapon systems. If the Navy activities reuse these 22 systems for weapon systems support, the Navy could reduce its requirements and save $30.4 million in future procurements. Additional reductions and savings may be obtainable if similar conditions are found for any of the additional 334 systems that the Navy plans to procure.

Discussions with management. In our discussion with officials at the Naval Air System Command, we emphasized the potential for reusing the Consolidated Automated Support Systems after developing test program sets. A listing of the 22 systems we identified that could be reused was furnished to these officials. The officials agreed that systems used for developing test program sets might be reused, thereby reducing overall requirements. The officials further indicated that the plan was dynamic and would be updated to reflect any reductions in system requirements that might result from reusing the systems.

RECOMMENDATIONS FOR CORRECTIVE ACTION

We recommend that the Assistant Secretary of the Navy (Research, Development, and Acquisition):

1. Assign clear and undivided management responsibility for overseeing the development, acquisition, and distribution of all test, measurement, and diagnostic equipment, including Consolidated Automated Support System equipment.

2. Develop and implement an effective internal control management system for monitoring the Navy-wide development, acquisition, and distribution of test, measurement, and diagnostic equipment. This management system should include:

a. A data base of all test, measurement, and diagnostic equipment, including test program sets, under development, being procured, or in the existing inventory.

b. Steps to ensure that the requirements of Secretary of the Navy Instruction 3960.6 for preparing workload and economic analyses to justify the acquisition of automatic test equipment are met.

c. Steps to implement, Navy-wide, the strategy developed by the Naval Air Systems Command for transitioning weapon systems to Consolidated Automated Support System test equipment.

3. Evaluate the potential for reusing Consolidated Automated Support Systems after developing test program sets for maintenance support to weapon systems, and reduce the total requirements for the systems by the number that will be reused.

4. Report and track the material weaknesses related to the control of acquisitions of 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 Navy (Financial Management) on September 6, 1991. As of December 11, 1991, no comments were received. Therefore, we request comments from the Assistant Secretary of the Navy by February 18, 1992.

STATUS OF RECOMMENDATIONS

		Response Should Cover:			
Number	Addressee	Concur/ Nonconcur	Proposed Action	Completion Date	Related Issues*
1.	Navy	X	X	X	IC
2.	Navy	X	X	X	M, IC
3.	Navy	X	X	X	M, IC
4.	Navy	X	X	X	IC

* M = monetary benefits; IC = material 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	Amount and or Type of Benefit
1.	Internal Control. Establishes clear responsibility for overseeing the development, acquisition, and distribution of test, measurement, and diagnostic equipment.	Included in 2. and 3.
2.	Economy and Efficiency. Navy will develop a management system to monitor the development, acquisition, and distribution of test, measurement, and diagnostic equipment.	Funds Put to Better Use. Monetary benefits cannot be quantified.
3.	Economy and Efficiency. Navy will reduce requirements for Consolidated Automatic Support Systems.	Funds Put to Better Use. The Navy could avoid at least $30.4 million in procurements over the 6-year Future Years Defense Program.
4.	Internal Control. Helps ensure implementation of Recommendations 1., 2., and 3.	Included in 2. and 3.

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 Navy

Office of the Assistant Secretary of the Navy (Research, Development, and Acquisition), Washington, DC
Naval Air Systems Command, Arlington, VA
Naval Sea Systems Command, Arlington, VA
Space and Naval Warfare Systems Command, Arlington, VA
Naval Air Test Center, Patuxent River, MD
Shore Intermediate Maintenance Activity, Norfolk, VA
Naval Weapons Support Center, Crane, IN
Naval Undersea Warfare Engineering Station, Keyport, WA
Naval Aviation Depot, Jacksonville, FL
Naval Air Station, LeMoore, CA
Marine Corps Air Station, El Toro, CA
Aviation Intermediate Maintenance Depot, San Diego, CA
Naval Aviation Depot, San Diego, CA

Non-DoD Activities

General Electric Corporation, Huntsville, AL

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 Navy

Secretary of the Navy
Assistant Secretary of the Navy (Financial Management)
Naval Audit Service

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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