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GAO

United States General Accounting Office
Washington, DC 20548

Logistics and
Communications
Division

SEPTEMBER 4, 1980

B-199353

The Honorable Harold Brown
The Secretary of Defense AGC00005

Dear Mr. Secretary:

Subject: Survey of DOD's Management of Automatic and General-Purpose Electronic Test Equipment (LCD-80-106)

We have completed a survey of the Department of Defense's (DOD's) management of automatic and general-purpose electronic test equipment. Maintenance activities use this equipment to test and repair operational systems. The Air Force and Navy, the largest users of automatic testing, have about $15 billion invested in current automatic test equipment inventories.

DOD, with industry's assistance, has studied the problems of selecting, acquiring, and using automatic test equipment and has ongoing efforts to address the problems. Therefore, we do not anticipate doing additional audit work at this time. Instead, we will monitor DOD's actions.

During our survey we did observe one area where improvements are needed. The Navy could better identify and coordinate general-purpose electronic test equipment overages and shortages among the using commands and then redistribute the equipment as appropriate. These actions will reduce the possibility that the Navy will invest large sums of money to purchase equipment which is already available in one of its commands for redistribution.

Our broad survey objectives were to (1) evaluate DOD's policies and procedures for authorizing, acquiring, selecting, and using automatic and general-purpose electronic test equipment and (2) determine the magnitude of test equipment problems identified previously.

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We achieved our second objective by reviewing DOD's most recent reports which outlined the major issues which needed addressing and actions planned to resolve them. To achieve our first objective, we visited the Air Force Logistics and the Air Force Systems Commands, Dayton, Ohio; the San Antonio Air Logistics Center, Kelly Air Force Base, Texas; Randolph Air Force Base, Texas; the Aerospace Guidance and Metrology Center, Newark, Ohio; Headquarters, Naval Material Command and the Naval Air, Electronic and Sea Systems Commands, Washington, D.C.; and the Patuxent Naval Air Station, Maryland.

GOVERNMENT AND INDUSTRY EFFORTS IN ADDRESSING AUTOMATIC TEST EQUIPMENT PROBLEMS

The requirements imposed by highly complex avionics systems in advanced modern weaponry have created an urgent need for faster and more sophisticated methods of testing. Conventional testing using manual techniques is often impractical because thousands of tests must routinely be performed on avionics systems to verify proper operation. Generally speaking, automatic testing is intended to provide more precise measurements, greater reliability in test results, fewer human errors, and reduced testing and maintenance training time and costs. However, the rapid growth of automatic test equipment use has caused many problems involving virtually all aspects of its operation and maintenance, thereby negating many of the advantages originally anticipated.

DOD and industry studies have identified many of the same kinds of serious problems in both services. Some of the major problems include:

--Some automatic test systems are not "mature" when delivered because their requirements are not identified until late into the weapon systems' development.

--The support equipment acquisition process requires that test requirements for each weapon system be evaluated independently, which sometimes leads to proliferation of peculiar automatic test equipment capable of supporting only one system at each maintenance level.

--Poor compatibility sometimes exists between the automatic test equipment and the end item it is intended to support, such as difficulties encountered in connecting the tester to the unit under test.

--Personnel problems have surfaced, such as the difficulty in retaining highly skilled and trained technicians. Reasons cited include lack of incentives, competition with industry for personnel, inadequate training to operate and maintain the equipment, and complications in training requirements because of equipment proliferation.

Numerous and various studies of automatic test equipment have been made over the last 5 years to resolve these types of problems. The studies were done by special military task forces, panels comprised of recognized military and private industry experts, and internal audit agencies.

We believe that the military services and industry should be commended for their aggressive efforts in identifying and seeking solutions to the problems in the automatic testing area. We plan to monitor these efforts further as the services proceed to implement improvements. While various efforts are underway, we noted that the Navy could improve its system for assuring that excess general-purpose electronic test equipment is used to satisfy needs before additional equipment is purchased.

NAVY EQUIPMENT OVERAGES AND SHORTAGES NOT COORDINATED FOR REDISTRIBUTION

The Navy has taken some actions to redistribute excess general-purpose electronic test equipment within its fleet activities. 1/ However, the Navy needs to take additional action to effectively identify and redistribute excess equipment Navy-wide. The Navy has not coordinated its efforts to redistribute excess test equipment among the various using commands because the Navy has neither a system to consolidate data on Navy-wide overages and shortages nor the ability to identify functionally similar items among air, sea, and shore using activities.

1/General-purpose electronic test equipment contains the capability, without modification, to generate, modify, or measure a range of parameters of electronic functions required to test two or more items of equipment or systems of basically different designs.

Pulling the data together from these activities is the responsibility of the Naval Electronic Systems Command. The command is the Navy's integrated logistics support manager for general-purpose electronic test equipment, which means it performs a wide range of tasks to carry out its responsibilities. The command is responsible for developing maintenance plans and concepts, developing necessary logistics data, determining consolidated requirements, and acting as the Navy's test equipment purchaser. In addition, it develops procedures to fill current test equipment needs by redistributing excess test equipment from other organizations.

Sea and air commands have reporting systems 1/ which indicate that some equipment is excess to needs at local levels. Any equipment authorized but not required, or on hand but not authorized, is considered excess and immediately available for redistribution within a command. Although some equipment in commands is excess, we were told that overall the Navy has a $45 million shortage in general-purpose electronic test equipment. However, the air and sea reporting systems for equipment overages and shortages operate independently, making it difficult to consolidate the data for Navy-wide redistribution purposes.

The Naval Sea Systems Command has recognized that redistributing excess equipment is a viable alternative for filling shortages and reducing costs. It started the General-Purpose Electronic Test Equipment Asset Screening Program in 1977 to redistribute unused equipment among fleet activities. Since that time the command has received 18,401 equipment items and has redistributed 7,379 of them, or about 40 percent. However, no such program exists to redistribute equipment by the other commands or between commands.

The Navy is developing a centralized reporting system to identify overages or shortages for redistribution among sea, air, and shore using activities. When implemented, it should provide visibility over the general-purpose test equipment inventory of more than 600,000 items valued at over $1 billion and better inform decisionmakers on the quantities, types, locations, and potential users of equipment.

1/The Naval Air Systems Command uses an Individual Material Readiness List and the Naval Sea Systems Command uses the Ships Portable Electronic Test Equipment Requirements List. The system under development for shore use is the Consolidated Shore Based Allowance List.

Naval Electronic Systems Command officials told us that before test equipment can be redistributed among commands, a technical review is necessary because the air and sea commands use different coding systems to identify types of test equipment. A third system under development for shore activities may add another different coding system. Such a review will ensure that the codes for air, sea, and shore users describe functionally similar items. Command officials said they are working on a project, as part of their centralized reporting system, which will enable them to identify interchangeable items; however, this project is not expected to be completed for at least 3 years.

Even when these systems are completed, the Electronic Systems Command said it will not have the authority to redistribute excess equipment from one command to another with shortages. We discussed this problem with both Naval Material Command and Electronic Systems Command representatives and they provided differing views.

The Naval Material Command advises and assists the Chief of Naval Material in formulating material policy, objectives, and priorities, including coordinating efforts and monitoring progress among commands. Command officials told us that using commands are reluctant to transfer excess test equipment to a command that needs it because they do not receive any refund for equipment already paid for. They added that, since each command owns the equipment, it should have the prerogative to hold that equipment for its own use for potential future needs. For these reasons, they feel that the Electronic Systems Command should not be given the authority to redistribute excess equipment.

The Electronic Systems Command, on the other hand, feels it cannot fully exercise its responsibility of avoiding unnecessary procurements as long as it lacks the authority to redistribute equipment among commands. Thus, Naval Material Command and Electronic Systems Command officials have not resolved whether this authority should be provided to achieve the maximum benefits in test equipment use. The Navy should resolve this matter for two reasons. First, the ever-increasing cost of equipment makes the proper use and maintenance of equipment on hand essential. Second, improvements in equipment use can enable the Navy to better project its equipment requirements and minimize its investment.

The Electronic Systems Command is gathering data from air and sea activities which will show current test equipment overages and shortages reported by each command. No data for shore activities is available at this time. However, command officials said they could redistribute equipment among commands now, using the air and sea data described earlier, if they were granted authority to do so. The only obstacle they see is the additional time it will take to manually identify technical parameters of potentially interchangeable items--a method is in the process of being computerized.

CONCLUSIONS

DOD, with industry assistance, has studied and is taking actions to address problems in selecting, acquiring, and using automatic test equipment. Because of these activities, we do not plan any additional independent audit effort at this time; rather, we plan to monitor DOD's actions.

The Navy has opportunities to improve its visibility over and use of general-purpose electronic test equipment. The Navy recognizes this and has taken actions to (1) better redistribute equipment to meet needs of fleet activities and (2) establish a centralized system to provide visibility over all general-purpose electronic test equipment inventory, estimated at over $1 billion.

Although the Naval Electronic Systems Command is developing a system to identify general-purpose electronic test equipment shortages and overages among commands, it will be at least 3 years before this system is completed. Currently, the command has data available from air and sea activities to identify overages in one command to fill shortages in other commands, but does not have authority to direct intercommand transfers of test equipment. The Navy should not wait until the Naval Electronic Systems Command system is completed to take action to redistribute general-purpose electronic test equipment among the commands.

Since the Electronic Systems Command is designated as the integrated logistics manager for this equipment, it seems to be the most logical activity to be given the authority to redistribute equipment, and in our opinion, this will better enhance the command's role as integrated manager.

RECOMMENDATIONS

We recommend that you direct the Navy to:

--Eliminate the obstacles that currently inhibit the redistribution of excess general-purpose electronic test equipment among using commands.

--Require the Naval Electronic Systems Command to certify that all available general-purpose electronic test equipment has been screened for availability and redistribution before purchasing new equipment.

As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

Copies of this report are being sent to the Chairmen of the above-mentioned Committees; the Director, Office of Management and Budget; and the Secretaries of the Air Force and Navy.

We appreciate the courtesies and cooperation extended to us by the Air Force and Navy.

Sincerely yours,

R. W. Gutmann
Director