

096905

~~76-0288~~ - 3

# REPORT TO THE CONGRESS

096905



BY THE COMPTROLLER GENERAL  
OF THE UNITED STATES



## More Improvement Needed In Equipment Management Practices In Government Laboratories

General Services Administration,  
Department Of Defense,  
and three civil agencies

For many years GAO and the Congress have tried to get Government agencies to improve the management of Government-owned laboratory equipment. Equipment valued at more than \$3.7 billion in four agencies could be used more effectively if recommended management techniques were adopted.

GAO's recommendations are aimed at:

- Strengthening GSA guidance on laboratory equipment management.
- Requiring agencies to verify that this guidance is being complied with.
- Instituting procedures to insure that desired results will be achieved.

PSAD-76-37

DEC. 3. 1975

~~702496~~ 096905



COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON, D.C. 20548

B-160140

To the President of the Senate and the  
Speaker of the House of Representatives

We have surveyed the progress of selected laboratories in implementing recommendations previously made by us and the House Committee on Government Operations to improve the effectiveness of the management of laboratory equipment. The General Services Administration has overall responsibility for Government-wide policies on property management.

We made this survey because of the large Government investment in laboratory equipment. The Department of Defense, the Energy Research and Development Administration (formerly the Atomic Energy Commission), the National Aeronautics and Space Administration, and the Department of Transportation have 114 laboratories doing research, development, test, and evaluation work with equipment valued at about \$3.7 billion.

We made our survey pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

We are sending copies of this report to the Director, Office of Management and Budget; the Secretaries of Defense and Transportation; the Administrator of General Services; the Administrators of the National Aeronautics and Space Administration and the Energy Research and Development Administration; the Secretaries of the Army, Navy, and Air Force; and the Director of Defense Research and Engineering.

A handwritten signature in black ink, reading "James B. Stacks".

Comptroller General  
of the United States

C o n t e n t s

	<u>Page</u>
DIGEST	i
CHAPTER	
1 INTRODUCTION	1
Prior reports and recommendations	1
Scope of survey	2
2 WALK-THROUGHS AND LABORATORY EQUIPMENT POOLS	4
Walk-throughs	4
Equipment pools	7
Audit agencies' reviews	9
Conclusions	10
Agency comments	11
Recommendations	11
Matter for consideration by the Congress	12
3 USE OF ELAPSED-TIME METERS	13
Potential benefits	14
Reluctance to use elapsed-time meters	15
Conclusion	16
Recommendation	16
Agency comments	16
APPENDIX	
I Letter dated April 2, 1975, from the Acting Administrator of General Services	18
II Letter dated March 25, 1975, from the Director of Defense Research and Engineering	21
III Letter dated February 28, 1975, from the Assistant Secretary for Administration, Department of Transportation	23
IV Letter dated March 13, 1975, from the Acting Associate Administrator for Organization and Management, National Aeronautics and Space Administration	27
V Letter dated March 13, 1975, from the Controller, Energy Research and Development Administration	30
VI Principal officials responsible for matters discussed in this report	32

## ABBREVIATIONS

AEC Atomic Energy Commission  
AFSC Air Force Systems Command  
DOD Department of Defense  
DOT Department of Transportation  
ERDA Energy Research and Development Administration  
FPMR Federal Property Management Regulations  
GAO General Accounting Office  
GSA General Services Administration  
NASA National Aeronautics and Space Administration

D I G E S T

In October 1967 the House Committee on Government Operations recommended that the General Services Administration and the Department of Defense institute management techniques to improve equipment utilization in Government laboratories.

In 1970 GAO made a followup review of equipment management in Defense laboratories. GAO's recommendations to the Secretary of Defense further stressed the need for more effective management procedures. (See p. 2.)

At 10 laboratories in 4 Federal agencies, GAO found that management techniques previously recommended had not been carried out effectively. The recommendations concerned:

- Walk-throughs. Walk-throughs are periodic inspection tours to identify idle and unneeded equipment that could be reassigned within the laboratory, placed in an equipment pool, or declared excess and made available to other agencies. (See p. 4.)
- Equipment pools. An equipment pool is centrally stored equipment that is available for temporary loan. Pool usage records can be helpful in establishing quantities of equipment needed. (See p. 7.)
- Elapsed-time meters. These meters record equipment-operating time and indicate equipment use. (See p. 13.)

GAO is recommending that the Administrator of General Services issue guidance requiring agencies to insure that:

- Walk-throughs and equipment pools are effective. (See p. 11.)

--Independent reviews are made to verify compliance with the Administration's policies on walk-throughs and equipment pools. (See p. 12.)

The Administrator should also insure that agencies comply with the General Services Administration's policy guidance and that the guidance achieves the desired results. (See p. 12.)

In addition, GAO is recommending that the Administrator select laboratories to formally test meters and obtain data for guiding laboratories on their use in equipment management. (See p. 16.)

Pending issuance of this report, the General Services Administration agreed to develop guidance requiring agency action on walk-throughs and equipment pools. (See p. 11.) The Administration agreed also to establish a project to determine the effectiveness of meters in identifying little-used equipment and to use the results as a basis for possible guidance to agencies. (See p. 16.)

Effective use of existing laboratory equipment depends heavily on how agencies carry out the Administration's equipment management policy. The Congress should inquire about these actions.

## CHAPTER 1

### INTRODUCTION

About 770 Federal laboratories do research, development, test, and evaluation work. Included are 77 laboratories in the Department of Defense (DOD), 18 formerly in the Atomic Energy Commission (AEC) and now in the Energy Research and Development Administration (ERDA), 10 in the National Aeronautics and Space Administration (NASA), and 9 in the Department of Transportation (DOT). These 114 laboratories' equipment is valued at about \$3.7 billion. Because of this large Government investment in equipment, we surveyed the Government laboratories' progress in improving laboratory equipment management.

### PRIOR REPORTS AND RECOMMENDATIONS

In June 1967 we reported (B-160140) to the Research and Technical Programs Subcommittee of the House Committee on Government Operations on the accounting methods and controls selected Federal research laboratories used in managing laboratory equipment. The report discussed a number of the management techniques various laboratories used to increase the efficiency and economy of laboratory operations. These techniques included walk-throughs (inspections) to identify unneeded equipment, equipment pools, and elapsed-time meters to record laboratory equipment use.

On August 9, 1967, the Subcommittee held hearings devoted primarily to the management techniques described in our June report. In October 1967 the full Committee approved House report 867 1/ on the Subcommittee's study. The Committee made three recommendations to the General Services Administration (GSA) and DOD specifically relating to equipment utilization. GSA and DOD were directed to:

1. Issue regulations requiring periodic walk-throughs to identify idle equipment in all Federal laboratories.
2. Under the policy guidance of the then Bureau of the Budget, issue instructions to all Federal laboratories on establishing research equipment pools.
3. Under the policy guidance of the then Bureau of the Budget, require selected Federal laboratories to

---

1/"Better Management of Research Equipment Procurement and Utilization in Federal Laboratories" (90th Cong., 1st sess., Oct. 30, 1967).

most elapsed-time meters on suitable types of equipment, to determine their operational use in equipment management.

In 1969 we started a followup review of the equipment management practices of six DOD laboratories in the New England area. Our report 1/ to the Congress again recommended that the Secretary of Defense (1) establish procedures governing walk-throughs, (2) issue guidelines covering the operation of equipment pools, and (3) issue guidance on using elapsed-time meters. We also recommended that the military audit agencies insure the laboratories' compliance with these procedures.

In 1974 the House Committee on Appropriations released an investigative report suggesting remedial actions to improve the utilization of research laboratories. 2/ In April 1975 GSA told us that, at the request of the House Appropriations Committee, it was working with the Office of Management and Budget and the National Science Foundation to develop management policies in response to the report's recommendations. According to GSA, these policies for facilities will complement policy revisions it will propose concerning equipment management.

#### SCOPE OF SURVEY

We made this survey to determine what progress had been made at selected Federal laboratories in carrying out our recommendations and those of the House Committee on Government Operations. We did not evaluate the total equipment management function at the laboratories we visited. We reviewed instructions, procedures, and practices relating to laboratory equipment use and to identification of equipment excess to users' needs.

Because our previous studies and congressional hearings had established the efficacy of certain management techniques, we concentrated on determining the extent to which they were being used. We did not make or participate in walk-throughs nor evaluate the overall management of existing equipment pools, but we did determine whether reviews by

---

1/"Need for Improved Laboratory Equipment Management Procedures" (B-160140, Nov. 24, 1970).

2/"Utilization of Federal Laboratories," Surveys and Investigations Staff March 1974 report to the House Committee on Appropriations.

the agencies' auditors had covered the use of these techniques.

We did our fieldwork, which was completed in fiscal year 1975, at five DOD and five civil agency research and development laboratories.

DOD laboratories

Air Force Cambridge Research Laboratories, Bedford, Massachusetts

Air Force Rome Air Development Center, Rome, New York

Army Electronic Laboratories, Fort Monmouth, New Jersey

Army Natick Laboratories, Natick, Massachusetts

Naval Underwater Systems Center, New London, Connecticut

Civil laboratories

AEC 1/--Los Alamos Scientific Laboratory, Los Alamos, New Mexico

AEC 1/--Sandia Laboratories, Albuquerque, New Mexico

DOT--Transportation Systems Center, Cambridge, Massachusetts

NASA--Goddard Space Flight Center, Greenbelt, Maryland

NASA--Langley Research Center, Hampton, Virginia

We also considered GSA's procedures for insuring that Federal Property Management Regulations (FPMR) on laboratory and research equipment were receiving adequate attention and were being effectively carried out by the departments and agencies.

The comments of GSA, DOD, DOT, NASA, and ERDA on matters discussed in this report are included as appendixes I through V, respectively.

---

1/Effective January 19, 1975, ERDA assumed AEC's responsibilities for matters discussed in this report.

## CHAPTER 2

### WALK-THROUGHS AND LABORATORY EQUIPMENT POOLS

In November 1969, under the policy guidance of the Bureau of the Budget (now the Office of Management and Budget), GSA amended FPMR (sec. 101-25.109) to require agencies to make walk-throughs (periodic inspection tours) to identify idle and unneeded research equipment and establish laboratory equipment pools where appropriate. This amendment applied to all Government laboratories.

Effective April 15, 1973, Executive Order 11717 transferred to GSA certain Office of Management and Budget functions, including formulating, prescribing, and insuring compliance with Government-wide policies on real and personal property management.

#### WALK-THROUGHS

In a walk-through, equipment in the laboratory is noted and employees are asked whether the equipment is needed, and if so, the extent of its utilization. Systematic, documented walk-throughs can identify unneeded or little-used equipment which can be redistributed within the laboratories, placed in equipment pools, or declared excess and thus made available to other Government agencies. Walk-throughs are most successful when made by top management and senior scientific personnel operating as a team.

The effectiveness of walk-throughs has been demonstrated. For example:

- At the 1967 Subcommittee hearing, a laboratory official testified that, during a 6-month period, about \$1.9 million worth of little-used equipment was identified by this technique. About \$1.1 million worth of this equipment was reassigned to active programs, and the balance was made available to other centers and agencies.
- A 1968 walk-through of a National Bureau of Standards laboratory identified as excess 198 pieces of equipment costing about \$156,000. Laboratory officials acknowledged the usefulness of this technique.
- In our 1970 review of six DOD laboratories, we identified about \$1.7 million worth of equipment as excess to users' needs. DOD agreed that maximum results were achieved when walk-throughs were made by personnel, such as teams comprising both management

and senior scientific personnel, who knew about equipment utilization and planned programs.

GSA requires periodic walk-throughs but does not require agencies to issue related instructions. DOD told us in 1970 that it was preparing instructions for carrying out FPMR section 101-25.109. Each of the services was preparing or had issued written instructions on making and documenting walk-throughs.

During this survey DOD said that, because of the actions the services had taken, it did not consider Defense-wide instructions necessary. Army headquarters and the Army Materiel Command issued regulations for walk-throughs. Navy headquarters had not issued any instructions on walk-throughs but the Naval Material Command had. Neither the Air Force headquarters nor the Air Force Systems Command (AFSC) had issued instructions or regulations. However, the Rome Air Development Center had issued a local instruction on walk-throughs. The Army Materiel Command, the Navy Material Command, and AFSC are responsible for operation of most military laboratories.

At the time of our visits to civil agencies, only AEC had issued instructions on walk-throughs; DOT and NASA had not. One NASA laboratory we visited, however, had issued local instructions, and NASA headquarters issued instructions on June 24, 1975.

#### Laboratory implementation

Two laboratories--Los Alamos Scientific Laboratory and the Army Electronic Laboratories--were making walk-throughs. The eight other laboratories were not fully following FPMR requirements, and the procedures some were following were not effective.

1. At Cambridge Research Laboratories there were no records showing that productive walk-throughs had been made.
2. The Transportation Systems Center was not making walk-throughs. However, after our visit, the Center scheduled and initiated a series of walk-throughs. Through January 1975, 549 items, valued at \$766,000, were declared excess by the laboratory, turned in to the central equipment pool, or transferred to other operating groups for better use.
3. The Naval Underwater Systems Center acknowledged that only superficial attention had been given to equipment utilization in combined walk-throughs and

housekeeping inspections. As a result of our inquiry, equipment custodians were asked to assess the need for instruments in their custody and they turned in an excess 259 items originally costing about \$136,000.

4. At Sandia Laboratories property management officials sought the support of top management to improve walk-throughs. Top management directed that, in lieu of formal walk-throughs in fiscal year 1974, equipment holdings be purged to reduce the equipment inventory value by at least 10 percent. This resulted in over 6,670 items of laboratory equipment with a total acquisition value of \$14 million being declared excess or being reassigned within the laboratories. After our visit, top management ordered formal walk-throughs in fiscal year 1975. As of May 1975, \$10.2 million worth of laboratory equipment had been identified as excess to the laboratories' needs.
5. Although Rome Air Development Center's local instructions required division officials to make walk-throughs, lower echelon employees often made them. Other inspections--supply discipline, housekeeping, etc.--were combined with the walk-throughs. A staff member responsible for the combined inspection told us that he had not reviewed equipment utilization.
6. Goddard Space Flight Center's local instructions required division officials to make walk-throughs but lower echelon employees often made them. Center officials acknowledged that walk-throughs were more effective when made by division officials.
7. Langley Research Center officials acknowledged that improvements could be made in identifying idle equipment. Scheduled walk-throughs at Langley were made at about 4-year intervals in conjunction with facility cleanup programs. To strengthen existing equipment management practices and procedures, Langley issued an instruction dated May 29, 1975, directing that semiannual walk-throughs be made by division chiefs and that the results be reported to the Deputy Director.
8. Another indication of the ineffectiveness of a laboratory's walk-through was demonstrated when, within 2 months after Natick Laboratories personnel identified \$900,000 worth of excess equipment under a headquarters-directed program, a headquarters followup team identified \$480,000 worth of additional

excess equipment. The team was also responsible for canceling equipment authorizations valued in excess of \$245,000.

At other installations we noted that when headquarters attention was focused on the problem, the benefits were considerable. For example, the Army Materiel Command started a commandwide program 1/ to locate, identify, and return to supply or dispose of unneeded supplies and equipment. The program resulted in installations' identifying excess equipment valued at about \$204 million and excess supplies valued at about \$27 million. Headquarters followup teams identified \$9 million worth of additional excess equipment and were responsible for canceling equipment authorizations amounting to \$28 million. The command believed that there was still room for improvement and established a fiscal year 1975 goal to further reduce the installations' equipment inventory value by \$20 million.

This command followup technique might benefit other military commands and civil agencies, particularly if installation officials are reluctant to make thorough walk-throughs on their own.

A headquarters audit of six AFSC laboratories, completed in May 1974, showed that equipment was not being turned in as excess and that the laboratories had no procedures for identifying excess or low-utilization equipment. The auditors' tests identified about \$470,000 worth of excess equipment. As a result of that audit, in June 1974 AFSC issued the following policy change.

"h. (Mandatory) The Laboratory Commander will conduct, or require top level management personnel to conduct, systematic walk-through inspection/utilization surveys of in-use equipment. These will be scheduled on an annual basis and phased evenly throughout the year. Inspection/surveys conducted will be documented and the results submitted to AFSC \* \* \*."

#### EQUIPMENT POOLS

A management technique to increase the effective use of laboratory equipment is the equipment pool. An equipment

---

1/Included laboratories; depots; arsenals; proving grounds; and Government-owned, contractor-operated plants.

pool is centrally stored equipment that is available for temporary loan. Pool issue records can be helpful in establishing quantities of equipment needed. The value and use of an equipment pool is further enhanced if infrequently used equipment identified during walk-throughs is placed in the pool.

Our 1970 report related the savings effected by a number of Government and commercial laboratory managers as a result of operating equipment pools. An official of one Government laboratory told us that countless dollars were saved on instrument purchases that were not made because the needed items were borrowed from the pool. A commercial research and development firm official told us that, after about 1 year of operation, the instrument pool had saved an estimated \$102,000 in proposed capital equipment expenditure.

Testimony at the August 1967 Subcommittee hearings revealed other advantages of equipment pools. It was noted that, since procurement of laboratory equipment frequently took a long time, requests for additional equipment often could be filled more rapidly by borrowing from the pool. Also equipment items could be borrowed from the pool and used on a trial basis, to determine the equipment most suitable for a proposed experiment.

FPMR requires that pools be established when circumstances indicate that conditions are appropriate. In 1970 DOD recognized the need to establish equipment pools where they could be used practically and economically.

Of the 10 laboratories we visited, 7 either had issued their own instructions and/or regulations on the use of pools or were subject to those issued by headquarters' organizations. The Transportation Systems Center, Rome Air Development Center, and Cambridge Research Laboratories had no instructions on the use of pools. After our visit, however, the Transportation Systems Center issued an instruction.

#### Laboratory implementation

Of the 10 laboratories, 6 operated equipment pools. Conditions at the Naval Underwater Systems Center have not improved since our 1970 review. At that time many of the pooled items had not been loaned out for more than a year and were considered excess. Our study confirmed this to be a continuing condition. Utilization records for the 29 items we reviewed showed that 28 had not been used since 1969.

Officials at the Transportation Systems Center acknowledged that the Center's pool was not operating effectively

because of the Center's large quantity of excess equipment still located in the laboratory.

We believe that the four laboratories not operating pools--Goddard Space Flight Center, Cambridge Research Laboratories, Rome Air Development Center, and Army Electronic Laboratories--should consider operating them. The Army Electronic Laboratories decided to establish a pool in February 1972 but has not yet done so. Goddard Space Flight Center took no action even though NASA's internal auditors noted quantities of similar but infrequently used equipment on hand and recommended that the Center establish an equipment pool. Our earlier review at Cambridge Research Laboratories showed that there was infrequently used equipment in the laboratory that should be placed in an equipment pool.

In 1974 AFSC audited equipment management at six laboratories--none of which our survey covered. At five laboratories property custodians acknowledged that certain equipment was not used, not needed, or seldom used. The auditors recommended that AFSC headquarters strengthen its management control of equipment. AFSC responded with a policy change authorizing the optional use of equipment pools at those laboratories where equipment could be jointly used and where pools were practicable. Detailed procedures were issued in December 1974.

In connection with a review of the administration and management of research activities at DOD medical laboratories in 1974, we found that equipment pools were not being operated at two of four Army laboratories or at two of three Navy laboratories we visited. As a result of our work, on July 23, 1975, the Navy Bureau of Medicine and Surgery issued guidelines on the use of pools in managing medical research equipment.

#### AUDIT AGENCIES' REVIEWS

In our November 1970 report we recommended to the Secretary of Defense that audit agencies verify laboratories' compliance with procedures governing walk-through inspections and equipment pools. Since that date none of the service headquarters audit groups (Army, Navy, and Air Force) have required field auditors to review compliance as part of their scheduled reviews. As mentioned in the previous section, one command headquarters audit group made its own review at six laboratories.

DOT headquarters audit groups have not required field auditors to review walk-through procedures or equipment pool operations at agency laboratories.

AEC's Audit Handbook required internal auditors to ascertain periodically (at least every 5 years) that prescribed procedures and practices of the agency, including those relating to equipment utilization by laboratory management, were carried out. The Audit Handbook included provisions on reviewing walk-throughs but not equipment pools. It was intended as a guide for headquarters and field audit personnel and provided both latitude and flexibility in the selection and scope of subjects for audit.

NASA headquarters furnished audit guidelines to its field offices on May 27, 1971. The guidance covered the auditing of walk-throughs and equipment pool operations and suggested that such steps be considered for inclusion in property utilization reviews.

#### Local field audits

At the two NASA laboratories the cognizant field auditors had commented on walk-through procedures and equipment pools or the lack of them in their reports. The cognizant field audit group at the two AEC laboratories had not reviewed either procedure since an AEC headquarters-directed audit was made during the first 6 months of 1970. At the five DOD laboratories, cognizant field auditors had not reviewed walk-through procedures anywhere and had reviewed equipment pool operations at only one Army laboratory. DOT field auditors had not made any reviews.

#### CONCLUSIONS

Although GSA has formulated and prescribed Government-wide policies with regard to property management, GSA needs to institute controls to insure effective use of laboratory equipment by the Government agencies directly responsible for the equipment.

Our visits to laboratories have shown generally that walk-throughs and equipment pools were not being used or were not being used effectively to improve equipment utilization. Therefore the agencies have not fully implemented FPMR policy.

Moreover GSA had no procedures for verifying agencies' compliance with its walk-through and equipment pool requirements prescribed in FPMR. Instead, GSA relied on the agencies to insure that its policy was achieving effective results.

The agencies' internal audit groups generally have not been instructed to give attention to the effectiveness of walk-through practices or to the reasonableness of management's decision not to establish equipment pools. In addition little audit coverage was given to the effectiveness of those pools that were in existence. Without such monitoring, agency headquarters' officials did not have adequate assurance that applicable FPMR provisions were being effectively carried out.

#### AGENCY COMMENTS

In commenting on this report, DOD, DOT, NASA, and ERDA agreed that walk-throughs and equipment pools could be useful techniques in managing equipment. DOT said, and we agree, that the decision to establish an equipment pool should be made on a case-by-case basis.

In a letter to us (see app. I), GSA agreed to circulate for agency comment a revised FPMR implementing our recommendations for strengthening GSA's walk-through and equipment pool policy guidance. In following up on GSA's stated intention, we found that GSA had not prepared the revised FPMR but preferred to wait until this report was issued.

DOD and DOT have agreed to instruct their internal auditors to include reviews of equipment management practices in their future audit plans. ERDA told us its internal auditors exercised their own judgment as to when they reviewed equipment utilization. Because internal audits of walk-throughs and equipment pools at the two laboratories we visited were made over 5 years ago, ERDA should audit these areas.

#### RECOMMENDATIONS

We recommend that the Administrator of General Services issue guidance to agencies to insure better equipment use. This guidance should require that each agency:

- Establish teams of top management and scientific personnel to make laboratory walk-throughs and report their findings to the head of the agency.
- Establish laboratory equipment pools or give the head of the agency written reasons why such pools are not needed.
- Prepare an annual report for the agency head on the use and effectiveness of the pooling of equipment.

--Make periodic independent reviews of walk-through practices and equipment pool operations, to determine their effectiveness.

We recommend that the Administrator also institute procedures to insure that agencies are complying with GSA's walk-through and equipment pool policy guidance and that this guidance is achieving the desired results.

MATTER FOR CONSIDERATION BY THE CONGRESS

The success of the above recommendations depends heavily on the agencies responsible for implementing GSA policy guidance. Therefore the Congress, in reviewing future appropriation requests for additional laboratory equipment, should inquire about actions agencies are taking to achieve effective use of existing equipment.

## CHAPTER 3

### USE OF ELAPSED-TIME METERS

An elapsed-time meter is a small meter which records, on a direct reading scale, the time that equipment is in operation. This information can be used in determining equipment use and scheduling equipment calibration.

An elapsed-time meter is relatively simple to install on any electrically operated equipment item and does not impair or impede its operation. Since a meter can be removed easily and reset for use on other equipment, there is no need to install one on each item of equipment. Additionally, the cost of a meter, including installation, is relatively small. For example, at one laboratory an installed meter cost less than \$12.

In our report to the Subcommittee in June 1967, we cited elapsed-time meters as possible aids for determining whether equipment use warrants its retention.

In its hearings in August 1967, the Subcommittee learned that the Army's Natick laboratory was testing the efficacy of elapsed-time meters and urged Natick officials to complete the test as soon as possible. Because meters were an unproven means for determining equipment use in research and development laboratories, the Committee on Government Operations recommended that GSA and DOD require other Federal laboratories to test meters on suitable types of equipment.

The Director of Defense Research and Engineering told the Subcommittee Chairman in May 1968 that DOD was encouraging the installation of elapsed-time meters on suitable types of equipment and that the test at Natick was progressing satisfactorily. DOD, however, did not follow the Committee's recommendation to test meters at other laboratories.

In November 1970 we reported that the Natick study had concluded that elapsed-time meters could not be used as the sole or primary means of determining equipment use. However, the information they provided was useful for scheduling calibration and identifying idle and little-used equipment which, in the absence of justification of need by the user, could be placed in equipment pools or declared excess. Accordingly, we proposed to the Secretary of Defense that DOD (1) issue guidance on the use of elapsed-time meters for utilization and calibration and (2) require justification from laboratories electing not to use this equipment management technique.

DOD replied that it considered our recommendation ill advised because retention of scientific equipment often had little or no relationship to its usage rate. Also considerable resources are required to support the use of elapsed-time meters and DOD must be concerned with cost benefits which can be determined only on a case-by-case basis. Therefore, because local laboratory managers are in the best position to determine when and under what conditions using elapsed-time meters makes good sense, DOD believed that the decision to use them must be left to the discretion of each laboratory director.

We agree that "time-in-use" alone may not be a valid measure of the need for scientific equipment, but we feel that elapsed-time meters can help management identify little-used items warranting management's specific attention. We also agree that meters are only one equipment management tool. The decision to use meters should be left to the discretion of the local laboratory director. It is still our opinion, however, that laboratory managers should be given guidance on when and how elapsed-time meters should be used and on the methods for making cost-benefit studies.

GSA also has not complied with the Government Operations Committee's recommendation to select laboratories to test elapsed-time meters. GSA, DOD, and the civil agencies included in our survey have not issued guidelines on the use of meters in a laboratory environment.

#### POTENTIAL BENEFITS

One laboratory included in our survey has demonstrated the benefits from using elapsed-time meters.

--Since 1971 NASA's Langley Research Center invested about \$21,000 in an elapsed-time-meter program, to determine equipment use for calibration and maintenance purposes. About 1,200 meters were installed on laboratory equipment. Readings showed an overall usage rate of about 19 percent. The program manager recommended that the meter program be expanded and that low-use equipment be returned to the equipment pool or its retention justified. Although the utilization phase of the program has not been fully carried out, about 80 equipment items, valued at \$120,000, have been identified as excess to users' needs and have been returned to the instrument pool, transferred to another user, or declared excess.

--Defective parts valued at \$2,800 were replaced by the manufacturer after the warranty period because meter readings showed that the equipment was not used extensively.

We believe that tests of elapsed-time meters by other laboratories are needed to document their effectiveness in determining equipment use and, if proven effective, to develop guidance for laboratory managers on their use.

Two laboratories in our survey initiated meter programs but had experienced problems.

1. The Army Electronic Laboratories procured 250 meters 2 or more years ago. Due to loss of personnel, only a small number of meters were installed on test and measuring equipment. A study of the results of this limited installation indicated a need to modify the experiment. Management is considering changes in the program before resuming it.
2. The Transportation Systems Center installed 77 of 300 available meters. We were told that the meter program had come to a standstill due to other priorities; accordingly, the full benefits of the program had not materialized. At the time of our review, 22 oscilloscopes were found to have low utilization and were being declared excess. We were also told that readings from the 55 other meters would not be available until after the equipment had been turned in for calibration or repair.

The Centers' management was not planning to resume its meter program until much of the acknowledged excess equipment has been disposed of. As mentioned on page 5, the Center identified a large quantity of excess equipment through a series of recent walk-throughs. By February 1975 management had expanded the meter program to include 103 items of laboratory equipment with elapsed-time meters installed.

Although the Army Materiel Command's guidance encouraged the use of meters on laboratory equipment, its program has not progressed to the point where meters have become fully operational in a laboratory environment.

#### RELUCTANCE TO USE ELAPSED-TIME METERS

Meter programs were either not in effect or not planned for the remaining seven laboratories. Laboratory officials

offered the following as some of the reasons for not using meters.

1. Establishing criteria to evaluate the results obtained from meter readings was a problem.
2. Researchers, by keeping instruments turned on, could make the meters' information unreliable.
3. Meters were not conducive to use in a research and development environment.
4. Meter programs were costly.

Laboratory officials could not document any of these reasons.

### CONCLUSION

The efficacy of elapsed-time meters in a research and development environment has been a longstanding controversy. We believe that, as the Langley Research Center program demonstrated, meters are tools that could be used to help manage laboratory equipment. The scientific community and laboratory management, however, appear reluctant or unwilling to try meters to prove or disprove their usefulness.

### RECOMMENDATION

We recommend that the Administrator of General Services select a representative number of laboratories to formally test elapsed-time meters and obtain enough data to guide Federal laboratories on their use in equipment management.

### AGENCY COMMENTS

In April 1975 GSA agreed to establish a project to determine the effectiveness of elapsed-time meters in identifying little-used laboratory equipment. DOT's Transportation Systems Center expressed interest in serving as a pilot installation. GSA said that the results would serve as a basis for possible revisions to FPMR.

NASA said that meters were useful in certain situations but had reservations on their general application. NASA had no objection to GSA's directing selected Federal laboratories to test meters as long as GSA maintained close cooperation with the affected agencies. DOD reiterated its earlier position that the use of elapsed-time meters should not be decided on an across-the-board basis but should be left to the discretion of local laboratory officials.

ERDA told us that in 1969 AEC made a study which disclosed only a few instances when the use of elapsed-time meters was of practical benefit in improving the utilization of equipment. AEC's study covered 21 contractor-operated facilities, but its report showed that only 1 facility had tested meters on laboratory equipment for utilization purposes, and then on only 43 items. Test results showed that 5 of the 43 items, or 12 percent, had not been used. A laboratory official told us that the limited sample size precluded any laboratorywide projection of these results.

UNITED STATES OF AMERICA  
GENERAL SERVICES ADMINISTRATION  
WASHINGTON, DC 20405



APR 2 1975

Honorable Elmer B. Staats  
Comptroller General of the United States  
General Accounting Office  
Washington, DC 20548

Dear Mr. Staats:

Thank you for the opportunity to review and comment on the draft of your proposed report to Congress entitled, Equipment Management Practices in Government Laboratories - More Improvement is Needed.

On October 25, 1967, the Committee on Government Operations approved and adopted your report B-160140 entitled, Better Management of Research Equipment Procurement and Utilization in Federal Laboratories. In response to this House Report, No. 867, GSA amended the Federal Property Management Regulations (FPMR) (41 CFR 101-25.109) to incorporate controls for use by Federal agencies in managing laboratory and research equipment which included the practice of walk-throughs and the pooling of equipment.

Your draft report indicates that agencies are still not making effective use of laboratory equipment and recommends aggressive action to assure that such equipment is used to the advantage of the Government. The draft also stresses the need for improved internal controls pertaining to laboratory walk-throughs and the pooling of equipment as well as the formal testing of the use of elapsed-time meters.

The Federal Property and Administrative Services Act, as amended, authorizes this agency to make surveys of Government property and property management practices, and to obtain reports thereon, as necessary. Under this authority and in consonance with the specific recommendations contained in the draft report, GSA will circulate for agency comment a revised FPMR which will include the following provisions. Each activity will be required to designate teams comprised of top management and scientific personnel to conduct laboratory walk-throughs on a scheduled basis, but no less than once annually. A report of the team's findings will be submitted to the head of the activity and be made available to

*Keep Freedom in Your Future With U.S. Savings Bonds*

internal audit groups for review. Activities will also be required to establish laboratory equipment pools, or justify in writing to the agency head the reasons such pools are not needed. Reports concerning the use and effectiveness of the pooling of equipment shall be submitted annually to the head of the activity and shall be furnished to internal audit teams.

As an aid to more efficient utilization of specialized equipment, GSA publishes a Directory of U.S. Government Inspection Services and Testing Laboratories. This directory contains listings of Federal agency inspection offices and testing facilities which are not engaged exclusively in research and development programs. It shows the types of commodities each inspection office and testing laboratory is staffed and equipped to inspect and/or test and the agency's policy on performing services for other Federal agencies. This information enables scientific personnel to obtain needed services thereby avoiding new procurement of laboratory equipment. A revision of this publication is currently under development and will be issued in the near future.

With respect to the use of elapsed-time meters, GSA did not pursue the testing of their use and relied on a study made at Natick Laboratories, Massachusetts, by the Department of the Army. The study concluded that the use of elapsed-time meters in themselves was not adequate as a primary means of determining satisfactory equipment utilization. However, GSA will establish a project to determine their effectiveness in identifying little-used items. The results will serve as the basis for possible further revisions to the FPMR. In addition, we are also working with the Office of Management and Budget and the National Science Foundation to develop management policies to improve the utilization of laboratory buildings. These policies are being developed at the request of the House Committee on Appropriations pursuant to recommendations contained in the report, "Utilization of Federal Laboratories" reprinted as part 7 of the 1975 hearings on Agriculture, Environment and Consumer Affairs. The management policies for facilities will complement the proposed FPMR revisions in the equipment area.

The Office of Audits has established improved followup procedures to ensure that management officials take appropriate action on GAO recommendations. The new procedures require the same followup action by the Office of Audits on GAO report recommendations as are in effect for recommendations made in GSA internal audit reports.

We believe that the above actions are responsive to the recommendations in the draft report.

Sincerely,

A handwritten signature in cursive script that reads "Dwight A. Tak". The signature is written in black ink and is positioned above the typed name and title.

Dwight A. Tak  
Acting Administrator



DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING  
WASHINGTON, D C 20301

25 MAR 1975

Mr. R. W. Gutmann  
Director, Procurement and Systems  
Acquisition Division  
General Accounting Office  
Washington, D. C. 20548

Dear Mr. Gutmann:

This is in response, on behalf of the Secretary of Defense, to your letter of January 8, 1975, requesting our review and comments on your draft report (OSD Case #3985) relating to equipment management practices in government laboratories.

We agree with the recommendations relating to walk-throughs, equipment pools and auditing. We do not agree with  
[See GAO note, p. 22.]  
the use of lapsed time meters on laboratory equipment as a guide on their operational use.

The Air Force Systems Command, The Naval Material Command, and Army have issued instructions relative to walk-throughs and equipment pools. These organizations, as indicated in your report, have responsibility for most military laboratory facilities. Compliance with equipment management procedures is a responsibility of the Laboratory Commander or Director who should accomplish this task in a meaningful and effective manner.

[See GAO note, p. 22.]

Department of Defense internal audit organizations will be instructed to assure that coverage of compliance with policy on walk-throughs and equipment pools is included in their audits of Federal laboratories.

As indicated in your report, we still believe that the use of elapsed time meters on scientific equipment should not be undertaken on an across-the-board basis but rather be left to the discretion of laboratory officials who are in the best position to determine when and if elapsed time meters make good sense. Your report bears out that this view also is held by laboratory and other management officials.



If I can be of any further assistance in this manner, please advise.

Sincerely,



Malcolm R. Currie

GAO note: The deleted comments relate to matters discussed in our draft report but omitted from or modified in this final report.



OFFICE OF THE SECRETARY OF TRANSPORTATION  
WASHINGTON, D.C. 20590

ASSISTANT SECRETARY  
FOR ADMINISTRATION

February 28, 1975

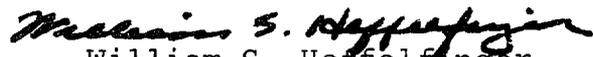
Mr. R. W. Gutmann  
Director, Procurement & Systems  
Acquisition Division  
U.S. General Accounting Office  
Washington, DC 20548

Dear Mr. Gutmann:

This responds to your letter of January 8, 1975, which requested the Department of Transportation's comments on the General Accounting Office's draft report entitled, "Equipment Management Practices in Government Laboratories - More Improvement is Needed." I have enclosed two copies of the Department's reply.

The DOT supports efforts to improve equipment management practices in Government laboratories. While the report recommendations are directed solely to the General Services Administration (GSA), we do have comments on one recommendation. Also, we have comments on certain findings pertaining to the Transportation Systems Center (TSC). These comments are also included.

Sincerely,

  
William S. Heffelfinger

Enclosures

DEPARTMENT OF TRANSPORTATION  
STATEMENT ON GAO REPORT

- I. TITLE: Equipment Management Practices in Government Laboratories - More Improvement is Needed - Department of Defense and Other Agencies (Code 952062), January 1975

II. GAO FINDINGS AND RECOMMENDATIONS:

In June 1967, GAO reported on the accounting methods and controls used to manage laboratory equipment by Federal research laboratories. As a result of hearings, the Committee on Government Operations recommended in October 1967 that the General Services Administration (GSA) and Department of Defense (DOD): (1) require laboratory managers to conduct walk-throughs to identify idle equipment; (2) provide guidance on establishing research equipment pools; and (3) test the usefulness of elapsed-time meters at selected Federal laboratories. In November 1970, GAO reported to the Congress that the Committee's recommendations were not effectively implemented by DOD. GAO made this current review to find out what progress Government laboratories have made in implementing GAO and Committee recommendations in the management of laboratory equipment, because of the large Government investment in equipment and since both GAO and the House Committee on Government Operations have reported on the need for more effective management over its use.

GAO recommended that the Administrator, GSA:

- (1) Advise heads of departments and agencies that aggressive action is needed to assure that walk-throughs and equipment pool operations are being effectively accomplished;
- (2) Advise heads of departments and agencies that cognizant audit organizations should be instructed to include in their scheduled reviews a check on compliance with FPMR policy on walk-throughs and equipment pools;
- (3) [See GAO note, p. 26.]
- (4) Implement the recommendation made in 1967 by the Committee on Government Operations and direct selected Federal laboratories to formally test elapsed-time meters to obtain sufficient data which could be used to provide guidance to laboratories on their operational use in equipment management.

While none of the above recommendations are directed to DOT, we have comments on recommendation 1 and comments on certain parts of the report concerning the Transportation Systems Center (TSC).

III. DOT COMMENTS ON FINDINGS AND RECOMMENDATIONS:

1. The Department of Transportation concurs with that part of recommendation 1 pertaining to walk-throughs. In our opinion, regularly scheduled walk-throughs of Government laboratories by top management officials should result in more effective use of available assets and should minimize the quantities of excess and underutilized equipment in laboratories. We do not agree that equipment pools should be established at all locations where laboratory equipment is used. Instead, decisions to establish an equipment pool should be made on a case by case basis, considering such factors as susceptibility of equipment to pool operation, scope of operation of the laboratory, quantity and value of equipment requirements, and the initial and continuing costs of establishing and maintaining a pool versus the benefits to be derived from its existence.

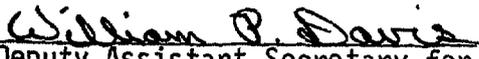
2.

[See GAO note, p. 26.]

[See GAO note.]

IV. STATUS OF CORRECTIVE ACTION:

The Department of Transportation fully supports efforts to improve equipment management practices in Government laboratories. The Department will include in future audit plans, audits of equipment management practices in Departmental research laboratories. As actions are initiated by GSA to implement GAO recommendations, DOT will cooperate to the fullest extent possible. In the interim, we will continue to give management attention to equipment management practices in all DOT laboratories to effect improvements wherever needed.

  
Deputy Assistant Secretary for  
Administration

GAO note: The deleted comments relate to matters discussed in our draft report but omitted from or modified in this final report.



## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON, D C 20546

REPLY TO  
ATTN OF D

March 13, 1975

Mr. Richard W. Gutmann  
 Director, Procurement and Systems  
 Acquisition Division  
 U.S. General Accounting Office  
 Washington, DC 20548

Dear Mr. Gutmann:

Thank you for the opportunity to comment on your draft report to the Congress on equipment management practices in Government laboratories (code 952062).

There are enclosed detailed comments of the NASA Comptroller regarding GAO's proposed recommendations to the Administrator of General Services. We are in substantial agreement with your report recommendations and implementation, as it affects NASA, has been initiated with regard to walk-throughs and equipment pools. However, we have some reservations about [See GAO note 1, P. 29.] the general application of time-lapse meters.

If we can be of further assistance, please let us know.

Sincerely,

Boyd C. Myers, II  
 Acting Associate Administrator  
 for Organization and Management

Enclosure

COMMENT OF THE NASA COMPTROLLER  
ON DRAFT GAO REPORT  
"EQUIPMENT MANAGEMENT PRACTICES IN GOVERNMENT  
LABORATORIES -- MORE IMPROVEMENT IS NEEDED (CODE 952062),"  
JANUARY 1975

With respect to the first recommendation on page 5 of the draft report, which reads:

"GAO recommends that the Administrator, General Services, advise heads of departments and agencies that

- aggressive action is needed to assure that walk-throughs and equipment pools are being effectively accomplished. (See p. 18.)
- cognizant audit organizations should be instructed to include in their scheduled review a check on compliance with policy on walk-throughs and equipment pools. (See p. 18.),"

we agree that walk-throughs and equipment pools can be useful techniques in the management of equipment. Both are used now at some NASA installations. Walk-throughs would be required at all installations under new agency guidelines now in preparation (proposed Section II, NHB 4200.1, the NASA Equipment Management Manual). This Section will also include guidelines which will encourage the use of equipment pools. In NASA the functionally responsible Headquarters office for property management, the Office of Supply and Equipment Management, regularly reviews property management activities at NASA's installations for adherence to policy guidelines and instructions, including NHB 4200.1.

With specific respect to internal audit activities, the Headquarters audit staff issued audit guidelines in May 1971, to all field audit offices which include noting the use of both walk-through practices and equipment pools. Reviews have since been made at several NASA locations using these guidelines (including the Goddard Space Flight Center and the Langley Research Center which were included in the laboratories visited by GAO).

With respect to the second recommendation, also on page 5 of the draft report, which reads:

"GAO also recommends that the Administrator, General Services

[See GAO note 1.]

-- implement the recommendations made in 1967 by the Committee on Government Operations and direct selected Federal laboratories to formally test elapsed-time meters to obtain sufficient data which could be used to provide guidance to laboratories on their operational use in equipment management. (See p. 24.),"

we interpose no objections to the consideration of these points by GSA so long as it includes close coordination with affected agencies like NASA. We acknowledge, however, reservations about the use of meters.

[See GAO note 1.]

We feel, also, that while meters may be useful in selected situations (e.g., in calibration programs) any contemplated requirement for general application (e.g., to measure the need for equipment by the frequency or length of individual usage) may well be founded upon misconceptions of the nature of much laboratory work and laboratory equipment.

  
Wm. E. Lilly  
NASA Comptroller

- GAO note:
1. The deleted comments relate to matters discussed in our draft report but omitted from or modified in this final report.
  2. Page references in this appendix refer to our draft report and do not necessarily agree with the page numbers in this final report.



UNITED STATES  
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION  
WASHINGTON, D.C. 20545

MAR 13 1975

Mr. Henry Eschwege, Director  
Resources & Economic Development Division  
General Accounting Office  
Washington, D. C. 20548

Dear Mr. Eschwege:

The January 1975, draft report on Equipment Management Practices in Government Laboratories of the Department of Defense and other agencies, enclosed with your letter of January 8, 1975, to Mr. John Abbadessa, has been reviewed by interested ERDA staff.

We are in full agreement with the objective of achieving maximum utilization of laboratory equipment and recognize the importance of directing attention to the effectiveness of management practices and procedures at Government laboratories.

[See GAO note, p. 31.]

Instructions were issued in 1972 which require management: (1) to conduct walk-throughs at least once every two years and to prepare a record of the participants, areas covered, and results achieved, and (2) to establish equipment pools in order to obtain optimum utilization of equipment. Considerable effort has been expended by Headquarters, field organizations, and contractors to improve the utilization of equipment, including laboratory equipment. Management reviews are conducted periodically to assure continued emphasis in this area. Based on these management reviews, we are of the opinion that there is general compliance with our published policy on walk-throughs and equipment pools.

[See GAO note, p. 31.]

The ERDA Audit Handbook requires the internal auditors to periodically ascertain that prescribed procedure and practices of the agency, including those relating to equipment utilization by laboratory management, are carried out.

Mr. Henry Eschwege

Pursuant to this requirement, the auditors at the various locations perform such reviews, exercising their own judgement as to when they will be made within the audit cycle. Additionally, a Headquarters directed agency-wide review of selected equipment management activities was conducted and the results were included in a consolidated report dated December 13, 1971. This review covered walk-through procedures and equipment pool operations at 12 field offices and 40 contractor locations, including Sandia and LASL.

[See GAO note.]

ERDA is in compliance with the first two GAO recommendations regarding the importance of aggressive action to assure that walk-throughs and equipment pools are being effectively accomplished and that cognizant audit organizations include in their scheduled reviews a check on compliance with policy on walk-throughs and equipment pools.

[See GAO note.]

As for the recommendation concerning the use of elapsed-time meters, we conducted a comprehensive review following this recommendation when it was made by the Committee on Government Operations to the GSA Administrator in 1967. The results of the review disclosed only a

PRINCIPAL OFFICIALS  
RESPONSIBLE FOR MATTERS  
DISCUSSED IN THIS REPORT

Tenure of office  
From                      To

DEPARTMENT OF DEFENSE

SECRETARY OF DEFENSE:

William P. Clements, Jr. (acting)	Nov. 1975	Present
James R. Schlesinger	July 1973	Nov. 1975
William P. Clements, Jr. (acting)	May 1973	July 1973
Elliot L. Richardson	Jan. 1973	May 1973
Melvin R. Laird	Jan. 1969	Jan. 1973
Clark M. Clifford	Mar. 1968	Jan. 1969

GENERAL SERVICES ADMINISTRATION

ADMINISTRATOR OF GENERAL SERVICES:

Jack M. Eckerd	Nov. 1975	Present
Dwight A. Ink (acting)	Oct. 1975	Nov. 1975
Arthur F. Sampson	June 1972	Oct. 1975
Rod Kreger (acting)	Jan. 1972	June 1972
Robert L. Kunzig	Mar. 1969	Jan. 1972
Lawson B. Knott, Jr.	Nov. 1964	Feb. 1969

DEPARTMENT OF TRANSPORTATION

SECRETARY OF TRANSPORTATION:

William T. Coleman, Jr.	Mar. 1975	Present
Claude S. Brinegar	Feb. 1973	Mar. 1975
John A. Volpe	Jan. 1969	Feb. 1973
Alan S. Boyd	Jan. 1967	Dec. 1968

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ADMINISTRATOR:

James C. Fletcher	Apr. 1971	Present
George M. Low (acting)	Sept. 1970	Apr. 1971
Thomas O. Paine	Apr. 1969	Sept. 1970
Thomas O. Paine (acting)	Oct. 1968	Apr. 1969
James E. Webb	Feb. 1961	Oct. 1968

Copies of GAO reports are available to the general public at a cost of \$1.00 a copy. There is no charge for reports furnished to Members of Congress and congressional committee staff members; officials of Federal, State, local, and foreign governments; members of the press; college libraries, faculty members, and students; and non-profit organizations.

Requesters entitled to reports without charge should address their requests to:

U.S. General Accounting Office  
Distribution Section, Room 4522  
441 G Street, NW.  
Washington, D.C. 20548

Requesters who are required to pay for reports should send their requests with checks or money orders to:

U.S. General Accounting Office  
Distribution Section  
P.O. Box 1020  
Washington, D.C. 20013

Checks or money orders should be made payable to the U.S. General Accounting Office. Stamps or Superintendent of Documents coupons will not be accepted. Please do not send cash.

To expedite filling your order, use the report number in the lower left corner and the date in the lower right corner of the front cover.

**AN EQUAL OPPORTUNITY EMPLOYER**

**UNITED STATES  
GENERAL ACCOUNTING OFFICE  
WASHINGTON, D.C. 20548**

**OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300**

**POSTAGE AND FEES PAID  
U. S. GENERAL ACCOUNTING OFFICE**



**THIRD CLASS**