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REPORT TO THE CONGRESS

Inequitable Charges For Calibration Services; Need For Accounting Improvements At National Bureau Of Standards.

B-115378

Department of Commerce

BY THE COMPTROLLER GENERAL
OF THE UNITED STATES

JUNE 18, 1970

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WASHINGTON, D.C. 20548

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

This is our report on inequitable charges for calibration services and the need for accounting improvements at the National Bureau of Standards, Department of Commerce. Our review was made 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).

Copies of this report are being sent to the Director, Bureau of the Budget; the Secretary of Commerce; the Secretary of Defense; and the Director, National Bureau of Standards.

Comptroller General
of the United States

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ABBREVIATIONS

BOB	Bureau of the Budget
DOD	Department of Defense
ECC	Electronic Calibration Center, National Bureau of Standards
GAO	General Accounting Office

D I G E S T

WHY THE REVIEW WAS MADE

The General Accounting Office (GAO) is required by law to review the accounting system of each executive agency. Accordingly, GAO reviewed selected aspects of the National Bureau of Standards accounting system. GAO also reviewed the pricing policy of the Electronic Calibration Center, Boulder, Colorado.

FINDINGS AND CONCLUSIONS

Charges for calibration services

The Bureau calibrates instruments for the Nation's scientific and industrial community--both in Government and private industry--and charges fees to recover the cost of providing this service.

Fees were inequitable and resulted in overcharges to the Department of Defense (DOD) and undercharges to private industry and other Federal agencies. During fiscal years 1966 through 1968, DOD was overcharged \$806,000, of which \$713,500 should have been paid by private industry. (See p. 9.)

The Bureau of the Budget and the Department of Commerce require that a charge be made to recover the cost of any services provided to identifiable members of the public when the services are above and beyond that provided to the general public.

In fiscal years 1966 and 1967, the fees charged private industry did not include a factor for building depreciation and departmental overhead costs. Although a factor was included in the fees charged in fiscal year 1968, the fees were not high enough to fully recover Bureau operating costs and building depreciation and departmental overhead. In all, about \$111,000 (in addition to the \$713,500) was not recovered from private industry during fiscal years 1966 through 1968. In addition, the factor is not being fully provided for under another Bureau program. (See p. 15.)

Accounting system improvements

The Bureau's accounting system needs to be improved to correct the following weaknesses.

- Costs which benefit only a limited number of projects make up a significant portion of the Bureau's overhead costs which are distributed to all technical projects. (See p. 19.)
- Administrative labor costs were being distributed to projects of certain divisions located at Boulder, Colorado, inequitably. (See p. 22.)
- Unrealistic estimates of the useful life of equipment resulted in an inequitable distribution of depreciation costs among accounting periods, and in inequitable charges to customers. (See p. 23.)
- The Electronic Calibration Center was allocated more than its share of depreciation expense in fiscal year 1967. (See p. 25.)

RECOMMENDATIONS OR SUGGESTIONS

GAO is recommending to the Secretary of Commerce that the Bureau

- ensure that user charges for services performed under all Bureau programs for private industry include a factor for depreciation of buildings and departmental overhead (see p. 18) and
- be required to review its methods of allocating overhead costs and make revisions to correct methods which are inequitable or inconsistent. Specifically, the Bureau should
 - (1) continue to periodically review Bureau overhead costs to remove those costs which do not primarily benefit all Bureau divisions or projects,
 - (2) clarify procedures to ensure that administrative labor costs will be distributed on a uniform basis,
 - (3) review determinations of useful life of research equipment periodically and revise them when necessary, and
 - (4) allocate depreciation expenses to projects of the divisions located at Boulder, Colorado, on a more equitable basis (see p. 30).

AGENCY ACTION AND UNRESOLVED ISSUES

In July 1969--after receiving a draft of this report--the Bureau revised its pricing policy and began charging all calibration customers a fee based on hours of work performed.

As of July 1, 1969, all Government customers are charged the same hourly rate to recover the Bureau's operating costs, while private industry is charged an additional 8.5 percent to cover building depreciation and departmental overhead. (See p. 14.)

The Bureau is now including a factor for building depreciation and departmental overhead costs in its fees for electronic calibration services performed for the public; however, the Bureau is not fully providing for this factor under at least one of its other programs. (See p. 18.)

The Director of the Bureau disagreed that there was a need for improving the accounting system in the manner recommended. GAO's recommendations are being made after consideration of the Director's comments. (See p. 26.)

MATTERS FOR CONSIDERATION BY THE CONGRESS

GAO is reporting the results of this review because of congressional interest in agency accounting systems and because of the pricing policy which resulted in the Government's paying for the cost of services performed for private industry.

CHAPTER 1

INTRODUCTION

The General Accounting Office has made a review of selected aspects of the accounting system of the National Bureau of Standards, Department of Commerce. The Bureau's accounting system was approved by the Comptroller General of the United States on February 5, 1953. The deficiencies discussed in this report were not significant enough to warrant withdrawal of our approval of the Bureau's accounting system. Our report is not intended as an overall evaluation of the financial management system of the Bureau. The scope of our review is described in detail on page 32.

The National Bureau of Standards was established by the act of March 3, 1901 (31 Stat. 1449, as amended; 15 U.S.C. 271-290), and is the principal focal point in the Federal Government for ensuring maximum application of the physical and engineering sciences to the advancement of technology in industry and commerce. To accomplish this purpose, the Bureau conducts research and provides services in three broad program areas (1) basic measurement standards, (2) materials research, and (3) engineering standards and applied technology.

The Bureau is composed of five major organizational units, each of which is primarily concerned with one or more of the aforementioned program areas. The major organizational units are the Institute for Basic Standards, the Institute for Materials Research, the Institute for Applied Technology, the Center for Radiation Research, and the Center for Computer Sciences and Technology.

The activities of the Bureau within these broad areas include:

1. The development and maintenance of national standards for physical measurements.
2. The coordination of these standards with those of other nations.

3. The calibration of instruments in terms of the national standards for the Nation's scientific community, industry, and commerce.
4. The development and dissemination of measurement techniques, standard reference materials, standard reference data, and engineering measurements and performance criteria.
5. The conduct of research in the properties of materials.
6. The operation of the Clearinghouse for Federal Scientific and Technical Information which supplies the industrial and scientific community with unclassified information about Government-sponsored research and development.
7. The development of automatic data processing standards and the conduct of research in computer sciences and techniques.

Costs incurred during fiscal year 1969 by the Bureau totaled about \$77.6 million. Of this amount, about \$2.3 million was incurred for construction and maintenance of plant and facilities and the remaining \$75.3 million was incurred for Bureau program operations. Of the amount for Bureau programs, about \$14 million was incurred at the Bureau's Boulder Laboratories in Boulder, Colorado.

Of the total Bureau staff of about 4,000 at June 30, 1969, about 3,370 were located at Bureau headquarters in Gaithersburg, Maryland, and the nearby Washington, D.C., area and about 630 were located at Boulder, Colorado.

The Bureau is engaged in certain basic research, development, and testing work which is financed by direct appropriations; other Federal agencies; State and local governments; the District of Columbia Government; and private institutions, enterprises, and individuals.

A working capital fund initially finances the cost of all work performed by the Bureau and is periodically reimbursed for the work from applicable Bureau appropriations

and other receipts, including advances and reimbursements from other Government agencies, non-Government organizations, and gifts and bequests.

WORKING CAPITAL FUND

The Bureau's working capital fund was established by the Deficiency Appropriation Act of 1950, dated June 29, 1950 (64 Stat. 275), which provided:

"For the establishment of a working capital fund, to be available without fiscal year limitation, for expenses necessary for the maintenance and operation of the National Bureau of Standards, including the furnishing of facilities and services to other Government agencies, not to exceed \$3,000,000. Said fund shall be established as a special deposit account and shall be reimbursed from applicable appropriations of said Bureau for the work of said Bureau, and from funds of other Government agencies for facilities and services furnished to such agencies pursuant to law. Reimbursements so made shall include handling and related charges; reserves for depreciation of equipment and accrued leave; and building construction and alterations directly related to the work for which reimbursement is made."

In addition to the original \$3,000,000 appropriation, the land, buildings, and equipment and certain other assets and liabilities of the Bureau were transferred to the fund and were considered a part of the corpus of the fund when it was established on July 1, 1950.

On August 3, 1956, the Organic Act of the Bureau (15 U.S.C. 271) was amended authorizing the Bureau to utilize the working capital fund in the performance of its authorized functions, and for any activity for which provision is made in the appropriations which reimburse the fund (15 U.S.C. 278b (a) and (b)).

Because the original appropriation was not considered adequate to cover current operating requirements, the

Departments of State, Justice, Commerce, and the Judiciary Appropriation Act, 1952, enacted October 22, 1951 (65 Stat. 593), provided an additional \$2,000,000 for the working capital fund. In addition, the Bureau was authorized, by various appropriation acts, to increase the working capital fund by about \$8,000,000 through transfers from the research and technical services appropriation and from the construction of facilities appropriation. Thus, the funds appropriated and transferred to the working capital fund as of June 30, 1969, totaled about \$13,284,100.

COST ACCOUNTING

Each separate undertaking by the Bureau, either for itself or for others, is classified as a project, assigned to an organizational unit, and identified with the specific source of financing to support the work to be performed. Within the Bureau the project is considered the cost center for the maintenance of cost accounting data, and there are two types of projects--technical projects and overhead projects. Costs of a project may be charged in total to a non-Federal sponsor or to funds appropriated directly to the Bureau or another Federal agency, or a project may be financed jointly by two or more sponsors. Reimbursements are to be based on the actual cost of performing the work.

The Bureau accumulates and distributes overhead costs at Bureau, institute, division, and Electronic Calibration Center (ECC) levels. Bureau overhead costs incurred in support of the technical projects relate to providing management, administrative, and staff assistance and to providing supply, housekeeping, machine shop, and maintenance services. These costs are accumulated in Bureau overhead projects.

Bureau policy provides in its Administrative Manual that (1) Bureau overhead be charged to the various projects as a predetermined percentage of the amount of all labor and personnel benefits charged to such projects, (2) institute overhead be distributed to division overhead projects on the basis of the percentage of the amount of total labor costs in each division, including division overhead labor but excluding any labor costs charged to Bureau overhead projects, and (3) division overhead be distributed to the projects of

the division on the basis of the percentage of the amount of direct labor cost in those projects. The Bureau's Administrative Manual does not provide for the method by which ECC overhead will be distributed; however, during the period covered by our review, it was distributed to ECC customers on the basis of predetermined percentages.

A list of principal Department of Commerce officials responsible for the administration of activities discussed in this report is presented as appendix II.

CHAPTER 2

INEQUITABLE CHARGES TO CUSTOMERS

OF BUREAU CALIBRATION SERVICES

The Bureau had made inequitable charges for calibration services, which resulted in overcharges to the Department of Defense (DOD) and undercharges to private industry and Federal agencies, other than DOD. Although the rates for calibration services to all Bureau customers except DOD were increased twice in fiscal year 1968 in an effort to equalize charges to customers, the inequitable charges continued. During fiscal years 1966 through 1968, the overcharges to DOD totaled about \$806,000. Of this amount, about \$713,500 was a result of undercharges to private industry and about \$66,500 was a result of undercharges to Federal agencies, other than DOD, while about \$26,000 was an overrecovery of project costs. Therefore, the Government incurred costs of about \$713,500 which should have been paid for by private industry.

Calibration services, as described on page 5, are performed for private industry and Government agencies, primarily DOD, at Bureau headquarters facilities at Gaithersburg, Maryland, and by certain divisions reporting to the Office of the Deputy Director, Institute for Basic Standards at the Bureau's Boulder Laboratories in Colorado.

The Electronic Calibration Center (ECC), which began operations in fiscal year 1958, is part of a division reporting to the Office of the Deputy Director, Institute for Basic Standards, at Boulder and provides calibration services for electronic equipment. Total ECC costs of performing calibration services consist of direct labor costs; other direct costs; and Bureau, institute/division, and ECC overhead. ECC overhead is very high in relation to direct costs and consists of costs incurred to provide (1) administrative support for calibration services, (2) maintenance of operating calibration systems, (3) recalibration of Bureau working standards and other instruments needed to operate calibration systems, and (4) noncapital and expendable equipment for calibration systems.

Bureau of the Budget Circular No. A-25 and Department Administrative Order No. 203-5 require that fees for services provided to the public be based on the total cost (including direct and indirect costs) to provide the services. Bureau regulations, dated November 30, 1962, require that fees for services provided to the public generally include a factor of 8.5 percent of the Bureau's operating costs of performing the work to cover building depreciation and departmental overhead. The application of this factor to calibration services performed for private industry customers is not included in our computations of the overcharges and undercharges for calibration services in this section but it is discussed in detail beginning on page 15 of this report.

In fiscal years 1966 and 1967, hourly rates charged by the Bureau for calibration services provided to private industry and Federal agencies, other than DOD, were established prior to the performance of the services. However, these rates were not adequate to recover the total Bureau operating costs in fiscal years 1966 and 1967 of \$706,585 and \$335,945, respectively, for calibration services provided to such customers. For the first 9 months of fiscal year 1966, the rates charged for the services were \$30 or \$35 for each hour of direct labor, depending on the nature of the service. In an effort to increase the volume of services performed for private industry, the fees charged to private industry and Federal agencies, other than DOD, for the remaining 3 months of fiscal year 1966 and for all of fiscal year 1967 were reduced to \$20 or \$25 an hour. However, the volume of services performed for private industry did not increase but in fact substantially decreased in fiscal year 1967. The Bureau performed 10,154 man-hours of work for private industry in fiscal year 1966 compared with only 5,688 man-hours of work in fiscal year 1967.

The above rates for fiscal years 1966 and 1967 were not adequate to recover the total costs of calibration services provided to private industry and Federal agencies, other than DOD, and the charges to DOD during these years were equal to the total remaining cost of calibration services, or at effective rates of \$125 an hour in fiscal year 1966 and \$60 an hour in fiscal year 1967. The Bureau was

thereby able to recover, from DOD, costs not recovered from other customers. These costs included an inequitable allocation of overhead.

The inequitable rates and resulting inequitable allocations of ECC overhead were brought to the attention of Bureau officials by the Bureau's Internal Audit Division¹ in a report issued in July 1966. We were informed by internal audit officials that, upon centralization, a follow-up review was discontinued because staff was not available to perform the required additional work on the follow-up review due to the higher priority of other internal audit activities.

Fees charged private industry and Federal agencies, other than DOD, by ECC for calibration and testing services were increased from \$20 and \$25 per hour of direct labor to \$40 and \$45 per hour effective July 1, 1967, and to \$45 and \$50 effective January 1, 1968. These rates were intended to allocate the costs of ECC between DOD and other fee-paying customers in proportion to direct labor costs. However, the revised rates charged for the work still resulted in the Bureau's recovering from DOD those Bureau operating costs not recovered from other customers. For fiscal year 1968 the effective rate to DOD, based on total costs allocated to them, was about \$75 a direct labor hour.

A result of the inequitable charges was that private industry and Government customers, other than DOD, were charged about \$780,000 less than their pro rata share of ECC costs during fiscal years 1966 through 1968, as shown in the following table.

¹Effective September 30, 1967, all internal audit activities in the Department of Commerce were centralized in the departmental Office of Audits.

GAO Computation of Overcharges and Undercharges
for Calibration Services
Fiscal Years 1966 through 1968

Customer	<u>Total ECC costs (note b)</u>			<u>Actual charges to customers</u>			<u>Overcharges or undercharges(-)</u>			
	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>Total</u>
Private industry	\$ 657,201	\$293,075	\$357,719	\$ 207,451	\$134,637 ^a	\$252,347	-\$449,750	-\$158,438	-\$105,372	-\$713,560
Government, other than DOD	<u>49,384</u>	<u>42,870</u>	<u>27,049</u>	<u>17,682</u>	<u>14,902</u>	<u>20,264</u>	<u>-31,702</u>	<u>-27,968</u>	<u>-6,785</u>	<u>-66,455</u>
	706,585	335,945	384,768	225,133	149,539	272,611	-481,452	-186,406	-112,157	-780,015
DOD	<u>596,104</u>	<u>555,803</u>	<u>466,401</u>	<u>1,093,598</u>	<u>732,827</u>	<u>598,484</u>	<u>497,494</u>	<u>177,024</u>	<u>132,083</u>	<u>806,601</u>
Total	<u>\$1,302,689</u>	<u>\$891,748</u>	<u>\$851,169</u>	<u>\$1,318,731</u>	<u>\$882,366</u>	<u>\$871,095</u>	<u>\$ 16,042</u>	<u>\$ -9,382</u>	<u>\$ 19,926</u>	<u>\$ 26,586</u>

^aIncludes \$12,000 for services performed for private industry which were funded from a Bureau appropriation.

^bIncludes ECC direct costs, Bureau and division overhead, and GAO computation of ECC overhead allocated on the basis of direct labor costs.

Of the \$3 million total ECC costs during fiscal years 1966 through 1968, about \$2.5 million was for ECC overhead. The hourly rates charged to private industry and Government agencies, other than DOD, control the costs to be absorbed by projects performed for these customers. The low predetermined hourly rates charged to these projects resulted in an underallocation of ECC overhead. Calibration services performed for DOD were financed by advance payments made to the Bureau by DOD. The costs, including those not covered by charges to private industry and Government agencies, other than DOD, were absorbed by DOD and were accumulated in projects and charged to the DOD advances monthly.

The following table illustrates the inequitable allocation of ECC overhead during fiscal years 1966 through 1968 by comparing the percentage of direct labor costs with the percentage of ECC overhead costs allocated for each type of customer.

Comparison of Percentage of Direct Labor Costs
with Percentage of ECC Overhead Costs
Allocated to Each Type of Customer
Fiscal Years 1966 through 1968

Customer	<u>Fiscal year 1966</u>		<u>Fiscal year 1967</u>		<u>Fiscal year 1968</u>	
	<u>Percent of labor costs</u>	<u>Percent of overhead costs</u>	<u>Percent of labor costs</u>	<u>Percent of overhead costs</u>	<u>Percent of labor costs</u>	<u>Percent of overhead costs</u>
Private industry	50.5	9.6	32.9	12.0	42.0	23.3
Federal agencies other than DOD	<u>3.8</u>	<u>0.4</u>	<u>4.8</u>	<u>0.4</u>	<u>3.3</u>	<u>2.7</u>
	54.3	10.0	37.7	12.4	45.3	26.0
DOD	<u>45.7</u>	<u>90.0</u>	<u>62.3</u>	<u>87.6</u>	<u>54.7</u>	<u>74.0</u>
Total	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

AGENCY COMMENTS AND GAO EVALUATION

The Director of the Bureau, in comments submitted to us on June 27, 1969, agreed that charges for calibration and testing services should be based on a uniform rate, or on a system which would achieve the effect of a uniform rate. He stated that the Bureau recognized this principle and, effective July 1967, the distribution of ECC overhead was revised, on the basis of estimated workload, in an attempt to equalize charges.

Although the allocation of ECC overhead was revised and the Bureau increased the fees charged to private industry for ECC calibration and testing services on July 1, 1967, and again on January 1, 1968, the inequitable charges to DOD continued. The Director said that charges were based on workload estimates and ECC overhead was distributed on the basis of these estimates; however, the DOD estimates proved significantly higher than the actual workload, and this factor was the source of the differential in the application of overhead costs.

We proposed that charges for calibration and testing services by ECC be based on a uniform rate applied to all customers on the basis of direct labor hours. The Director stated that, beginning in July 1969, the Bureau would adopt a system which would ensure the distribution of overhead among customers in proportion to actual direct workload. The revised method of distributing overhead adopted by the Bureau in July 1969 is based on direct labor hours. We believe that this method will result in an equitable distribution and full recovery of overhead costs applicable to customers, if properly implemented. We plan, as part of our future audits of Bureau activities, to review the implementation of the revised method of distributing overhead.

The Director stated also that consideration should be given to the history of ECC. He stated further that ECC was established primarily to meet the special needs of DOD and that, for this reason, an equal distribution of ECC overhead charges between DOD and public and other Government users would have been inequitable. Further, the Director stated that, as the public workload grew, it was

recognized that equality of charges was desirable and that action in this direction was now under way. As of July 1, 1969, all Government customers were being charged the same hourly rate, while private industry customers were being charged an additional 8.5 percent to cover building depreciation and departmental overhead.

ECC began operations in fiscal year 1958. The table on page 12 shows that the workload during fiscal years 1966 through 1968 for private industry and Federal agencies, other than DOD, varied from about 38 to about 54 percent of the total workload. Further, according to reports prepared by the Bureau's Internal Audit Division, the workload for private industry and Federal agencies, other than DOD, did not increase substantially during 1959 through 1965 but varied from about 40 to about 50 percent of the total workload of ECC. We believe that the actual private industry and other Government workload, in relation to the total workload during the early years of the operation of ECC, was substantial enough to have warranted an equitable distribution of overhead costs to all customers on the basis of workload.

CHAPTER 3

BUILDING DEPRECIATION AND DEPARTMENTAL OVERHEAD NOT RECOVERED BY THE BUREAU

In fiscal years 1966 and 1967, the Bureau's fees to private industry customers for work performed by the Electronic Calibration Center (ECC) did not include a factor to recover building depreciation and departmental overhead costs. In fiscal year 1968 a factor of 8.5 percent of the Bureau's operating costs of performing the work, to cover building depreciation and departmental overhead, was included in the Bureau's fees to private industry customers and resulted in about \$19,800 of additional revenue which would not have otherwise been realized. The actual charges, however, including the above factor, to private industry customers during fiscal year 1968 were only about \$252,300, while the cost of doing the work was about \$357,700 as shown in the table on page 12 of this report.

By law the Bureau has authority to use any revenues collected from the operations of its working capital fund to offset its operating costs before it is required to pay any moneys into the general fund of the Treasury. Since the Bureau did not collect about \$105,400 of fiscal year 1968 ECC operating costs from private industry, the above collection of \$19,800 would, in practical effect, be a recovery of ECC operating costs rather than a recovery of building depreciation and departmental overhead costs. The latter costs are nonoperating costs which are financed by appropriations outside the working capital fund and revenue collected to cover them would be paid into the general fund of the Treasury if there were no operating loss or prior years' fund impairment. During fiscal years 1966 through 1968, building depreciation and departmental overhead costs totaling about \$111,000 were not recovered on the basis of the 8.5-percent factor used by the Bureau.

Bureau of the Budget (BOB) Circular No. A-25, dated September 23, 1959, and as amended on October 22, 1963, requires that a charge be made to recover the full cost to the Government of services provided to identifiable members

of the public, if the services are above and beyond that which are provided to the general public. This charge is referred to as a user charge. It provides also that the maximum fee for a special service be governed by the total costs of performing the service and not by the value of the service to the recipient.

Department of Commerce Administrative Order No. 203-5 (revised), dated September 7, 1961, sets forth the general policy of the Department relating to charges to recover costs for services to the public that provide a special benefit to recipients. It states that one of the objectives of the program is to provide fair and equitable charges for services rendered by the Department, thereby reducing the burden of cost on the general taxpayer.

The National Bureau of Standards Administrative Manual requires that fees for services available to the public include, in addition to the Bureau's operating costs of performing the work, a factor to cover building depreciation and departmental overhead. To recover building depreciation and departmental overhead costs, the Bureau, on November 30, 1962, established a rate of 8.5 percent to be applied to the Bureau's operating costs of performing the work. In July 1969 separate fees were established for private industry customers and for Government customers. Only the fee for private industry customers includes a factor for building depreciation and departmental overhead. Our review did not include an examination of the adequacy of the 8.5-percent rate established by the Bureau.

Although depreciation of buildings and departmental overhead are only a part of the total user charge, as defined by BOB Circular No. A-25, the Bureau refers to the 8.5-percent factor established for these costs as the user charge. In the agency comments included in this chapter and included as appendix I to this report, references to user charges or user service charges by the Director of the Bureau pertain to the 8.5-percent factor for building depreciation and departmental overhead costs.

As discussed on page 11 of this report, during fiscal year 1968 the Bureau's charges to private industry for work performed by ECC were not adequate to recover the Bureau's

operating costs of the work. Because of the inequitable allocation of overhead cost between private industry and Government customers, the base to which the 8.5-percent factor was applied was too low to recover these costs. Consequently, the Bureau's charges to private industry for work performed by ECC did not result in full recovery of building depreciation and departmental overhead.

The total Bureau operating costs applicable to the work performed for private industry, including ECC overhead applied in proportion to the total direct labor costs, were about \$1.3 million for fiscal years 1966 through 1968. On the basis of the 8.5-percent factor established by the Bureau for building depreciation and departmental overhead, we estimate that the Bureau should have recovered an additional \$111,000 for the 3 fiscal years.

The Bureau's Internal Audit Division, in reports issued in February and July 1966 and again during a follow-up review in 1967, had advised Bureau officials that fees for work performed by ECC and certain Bureau divisions, which provided calibration services to private industry, were not adequate to recover the full costs of the work, including the cost of building depreciation and departmental overhead.

ECC fees were increased in July 1967 and again in January 1968. However, our review showed that ECC fees were still not adequate to recover the Bureau's operating costs of the work for private industry and the cost of building depreciation and departmental overhead. (See p. 12.)

AGENCY COMMENTS AND GAO EVALUATION

The Director of the Bureau stated that, although a factor for user charges was overlooked in fiscal years 1966 and 1967, in fiscal year 1968 an 8.5-percent factor was included in the fee to recover the user service charge from the public.

The Bureau's charges, however, to private industry for work performed by the ECC in fiscal year 1968, including the 8.5-percent user charge factor, were not adequate to recover the Bureau's operating costs of the work. The

Bureau's method of allocating overhead costs for calibration services in fiscal year 1968 resulted in undercharges to public users and consequently, on the basis of the actual public workload during that year, the 8.5-percent user charge was not recovered. We believe, however, that the implementation of the revised method of distributing overhead costs adopted by the Bureau in July 1969 should result in the Bureau's recovering, in an equitable manner, ECC costs for calibration services from both Government and public users. If ECC costs are fully recovered in an equitable manner, the application of the 8.5-percent factor to project costs should result in recovery of building depreciation and departmental overhead costs, provided the 8.5-percent rate as determined by the Bureau is adequate.

The Director of the Bureau has stated also that fees for the public for calibrations performed in other organizations of the Bureau include a factor for building depreciation and departmental overhead. However, in addition to calibration work, the Bureau provides other services to public customers, the costs of which should also include an appropriate user charge factor. For example, our survey of the Bureau's Standard Reference Materials Program has indicated that the appropriate user charge is not being fully provided for.

RECOMMENDATION TO THE SECRETARY OF COMMERCE

We therefore recommend that the Secretary of Commerce require the Bureau to ensure that user charges for services performed under all Bureau programs for private industry include a factor to recover the cost of building depreciation and departmental overhead.

CHAPTER 4

NEED FOR IMPROVEMENTS IN ACCOUNTING SYSTEM

We have noted several areas where we believe improvement is needed in the Bureau's system of accounting for and distributing costs to divisions and projects. We found that (1) costs which benefit only a limited number of projects make up a significant portion of the Bureau's overhead costs which are distributed to all technical projects, (2) certain administrative labor costs were being distributed inequitably, (3) unrealistic estimates of the useful life of equipment resulted in an inequitable distribution of depreciation expenses among accounting periods, and (4) the Electronic Calibration Center was allocated about \$30,000 more than its pro rata share of depreciation expense in fiscal year 1967.

The Bureau's Organic Act provides, in general, that charges for services performed for both Government and public customers are to be based on the cost of the services; therefore, the Bureau should account for costs in a manner which will accurately reflect the cost of the services being provided.

ACCUMULATION AND DISTRIBUTION OF BUREAU OVERHEAD COSTS SHOULD BE IMPROVED

Costs which benefit only a limited number of projects make up a significant portion of the Bureau's overhead costs which are distributed to all technical projects. Only about \$1.6 million of total Bureau overhead costs of \$14.5 million, or about 11 percent, benefited all technical Bureau projects to which Bureau overhead was applied in fiscal year 1967. However, the remaining costs of about \$12.9 million, or 89 percent, which did not benefit all Bureau sites or all Bureau activities were also applied to all technical projects.

Each undertaking of the Bureau, either for itself or for others, is identified as a specific project. Bureau overhead costs incurred in support of the scientific projects of the Bureau relate to providing management,

administrative, and staff assistance and supply, housekeeping, machine shop, and maintenance services. Bureau overhead is applied Bureau-wide to all technical projects on the basis of the dollar amount of all labor and personnel benefits charged to the project.

The Bureau assigns a project distribution code number to each Bureau overhead project to designate the location or beneficiary of the overhead project. We used the Bureau's project distribution code numbers, without determining their validity, to prepare the following table which shows for fiscal year 1967 the number of Bureau overhead projects and costs thereof by beneficiary or location.

<u>Description</u>	<u>Number of Bureau overhead projects</u>	<u>Percent of total Bureau overhead projects</u>	<u>Fiscal year 1967 Bureau overhead costs</u>	<u>Percent of total Bureau overhead costs</u>
Projects which benefit all technical Bureau projects	25	13	\$ 1,631,000	11
Projects which benefit Washington and Gaithersburg locations and the Clearinghouse for Federal Scientific and Technical information	20	10	1,646,000	11
Projects which benefit only technical projects of the Clearinghouse for Federal Scientific and Technical Information	7	4	387,000	3
Projects which benefit only technical projects in the Institute for Applied Technology including the Clearinghouse for Federal Scientific and Technical Information.	1	1	176,000	1
Other projects located at Washington and Gaithersburg	90	47	8,061,000	55
Projects jointly benefiting Bureau and Environmental Science Services Administration projects at Boulder	19	10	825,000	6
Other projects located at Boulder	24	13	1,337,000	9
Special projects, not included in the above	<u>3</u>	<u>2</u>	<u>482,000</u>	<u>4</u>
Total	<u>189</u>	<u>100</u>	<u>\$14,545,000</u>	<u>100</u>

The above tabulation shows that only 13 percent of the total number of fiscal year 1967 Bureau overhead projects,

or 11 percent of fiscal year 1967 Bureau overhead costs, benefited all Bureau technical projects. Notwithstanding, total Bureau overhead of \$14,545,000 was distributed to all technical Bureau projects.

For example, the Boulder and Gaithersburg instrument shops incurred indirect costs of about \$865,000 in fiscal year 1967, all of which was charged to Bureau overhead. When a piece of equipment is fabricated by the instrument shops in either Boulder or Gaithersburg, the direct cost of such work is capitalized but the indirect costs, such as indirect labor and depreciation expense, are charged to Bureau overhead. Because the indirect costs are charged to Bureau overhead, the cost of a piece of equipment is understated and the costs of all other projects to which Bureau overhead is applied are collectively overstated for a like amount.

Also, as an example, the annual rental of about \$137,400 for a building used only by the Laboratory Astrophysics Division at Boulder was charged to Bureau overhead and distributed to all technical projects of the Bureau rather than to only the projects of that division.

The Bureau has recognized that various costs charged to Bureau overhead in fiscal year 1967 should not be allocated to all Bureau technical projects. The Bureau's Budget Division prepared a list of 13 Bureau overhead activities which should be charged directly to technical projects or allocated to only benefiting divisions. We estimated that the removal of these activities from Bureau overhead would result in a reduction of about \$2.7 million in Bureau overhead costs distributed to all technical projects.

As of July 1, 1968, the Bureau had directed that eight of the 13 overhead projects be charged directly to benefiting projects. On the basis of fiscal year 1967 costs, this action would reduce Bureau overhead costs by about \$1.4 million. Charging these costs directly to a project, division, or institute not only would result in a more equitable distribution of costs to using activities but could also result in making Bureau officials more cost conscious.

LACK OF UNIFORM PROCEDURES FOR THE EQUITABLE
ALLOCATION OF CERTAIN ADMINISTRATIVE
LABOR COSTS

Our review at the Boulder Laboratories showed a lack of uniform Bureau-wide procedures for the allocation of the labor costs of certain administrative personnel, which had resulted in an arbitrary and inequitable distribution of overhead costs among Bureau projects.

In the operating sections of certain divisions, the labor costs of section administrative personnel were arbitrarily charged partially or wholly to the overhead of the divisions or to a specific project or group of projects. Since institute/division overhead is distributed to technical projects on the basis of labor costs, the sections which charge administrative labor directly to projects are bearing their own administrative labor costs plus a portion of the administrative labor costs of other sections included in institute/division overhead.

Also, since the direct charging of administrative labor increases the base used in the computation for the distribution of both institute/division and Bureau overhead, the projects of these sections to which labor is charged directly bear a proportionately larger share of all overhead costs. The projects of the sections to which labor costs are charged partially or wholly to division overhead--reducing the labor base of the section--bear a proportionately smaller share of all overhead costs.

NEED FOR IMPROVED DEPRECIATION ACCOUNTING
AND ALLOCATION OF DEPRECIATION EXPENSES

Unrealistic estimates of the useful life of equipment resulted in an inequitable distribution of depreciation expenses among accounting periods and, therefore, in inequitable charges to customers receiving services during these accounting periods. Also, depreciation expense for equipment of the Electronic Calibration Center (ECC)--a component of the Radio Standards Engineering Division, a division reporting to the Office of the Deputy Director, Institute for Basic Standards, Boulder--was not allocated in the same manner through the allocation of institute/division overhead as the depreciation expense of other equipment in the same division. As a result, ECC was allocated about \$30,000 more than its pro rata share of depreciation expense in fiscal year 1967.

Unrealistic estimates of useful life of equipment

At the time of our field review the Bureau employed the straight-line "group method" of depreciation. Under this procedure an average service life is estimated for an entire group of similar units of equipment and the rate indicated by such estimate is applied to the cost of units in use for the estimated period. The accumulated depreciation allowance at any point is considered to apply to the group as a whole rather than to any particular units.

The difference between the cost and the accumulated depreciation allowance of the group represents the book value of the group of assets. Under the group method the full cost of the equipment and any removal costs are charged to the accumulated depreciation allowance when equipment is retired. Salvage value is credited to the accumulated depreciation allowance.

The Bureau had not given adequate consideration to all pertinent factors in estimating the useful life of capital equipment. Also, the Bureau was not reviewing and adjusting, when necessary, the period of estimated useful life of capital equipment. As a result, capital equipment was fully depreciated in the accounts prior to the expiration

of its useful life, resulting in the inequitable distribution of depreciation expense among accounting periods.

Depreciation expense of all Bureau equipment amounted to about \$2.4 million and \$3 million, respectively, for fiscal years 1968 and 1969. The Bureau's accounting records as of August 26, 1967, showed that, in terms of acquisition cost, 93 percent of ECC's total capital equipment had been assigned a 5-year estimated useful life for depreciation purposes. Of the ECC equipment in this group, 54 percent acquired at a cost of about \$1.7 million was 5 years old or older and had been fully depreciated in the accounting records. For example, some equipment was more than 11 years old. During the 5-year period when the equipment was depreciated, the total cost of operating the ECC was overstated because of the excessive amount of depreciation that was included in the total operating costs. Subsequent to the 5-year depreciation period, ECC's costs were correspondingly understated.

Bureau records show that, as early as October 1964, the Bureau was aware that the expected useful life established for depreciation of equipment was unrealistically short. In a report issued in July 1966, the Bureau's Internal Audit Division advised Bureau management that the 5-year life expectancy for ECC's high-frequency and microwave equipment was not realistic and should be in excess of 5 years. It was concluded in the report that consideration should be given to a comprehensive reevaluation of ECC's equipment life expectancies with the objective of reducing ECC operating costs. At the time of our review, more than a year later, no change had been made in the estimated life expectancies of ECC equipment.

However, effective July 1, 1968, the Bureau converted to the straight-line "item method" of depreciation accounting with the conversion of equipment records from an electrical accounting machine operation to a computer operation. We were advised by a Bureau official that, although some minor changes in depreciation rates were made at this time, no action was taken to make an overall evaluation or study of the established useful lives of equipment with a view to establishing more realistic estimates of useful life.

Although the straight-line "item method" of depreciation eliminates the possibility, inherent in the straight-line "group method", wherein an asset can be depreciated beyond its estimated useful life if it is not retired, it does not eliminate the possibility of prematurely depreciating such assets if the estimated useful lives continue to be underestimated. Under both the straight-line "group method" and "item method" of depreciation, depreciation rates should be adjusted whenever there is good evidence that estimated useful lives (or salvage values, if any) are incorrect.

ECC charged disproportionate share
of depreciation expense

Bureau policy provides that depreciation expense of equipment will ordinarily be allocated to all technical projects within a division through the application of institute/division overhead. Although the Electronic Calibration Center (ECC) is a part of the Radio Standards Engineering Division, depreciation of ECC equipment is not charged to institute/division overhead, but is charged only to ECC projects through ECC overhead. Since ECC is also allocated a portion of institute/division overhead costs, its projects receive a disproportionate share of the total depreciation expense of the division.

In fiscal year 1967 the total equipment depreciation expense for the division, exclusive of ECC, was about \$115,700. Of this amount, about \$7,436 represented depreciation expense for administrative equipment and about \$108,264 represented depreciation expense for technical equipment. Of the \$108,264 of technical equipment depreciation expense more than \$30,000, or about 28 percent, was allocated to ECC in fiscal year 1967 in addition to the depreciation expense of about \$33,000 for its own equipment. This practice resulted in ECC's absorbing about \$30,000 more than its pro rata share of the depreciation of the technical equipment of the division in fiscal year 1967. Consequently, other technical projects of the division have been charged less than they otherwise would have been, had all units of the division been allocated depreciation on a uniform basis.

CONCLUSION

An effective financial management system, including a satisfactory accounting system is necessary to provide essential and reliable information to Bureau management officials. The production and reporting of significant cost information are essential to Bureau management in establishing the charges for the various services performed by the Bureau and for controlling and appraising program performance. The practice of charging to Bureau overhead the costs of activities which do not benefit all technical projects, the inconsistent treatment of section administrative labor costs, and the Bureau's manner of depreciation accounting and allocation of depreciation costs result in inequitable distribution of costs to projects.

AGENCY COMMENTS AND GAO EVALUATION

The Director of the Bureau disagreed, in general, that it was inappropriate to include in Bureau overhead those costs which were applicable only to certain projects, institutes, or divisions and concluded that the Bureau's present overhead system was consistent with good accounting practice. The Director stated that the Bureau had invested considerable effort in developing practical techniques for allocating costs and the system in use was similar to the cost accounting systems of private industry whereby overhead costs were distributed among productive projects according to a fixed formula.

He stated further that very few overhead services benefit all productive projects but that the services must be available to all and that one of the principles underlying an overhead distribution system is that every productive project benefits sufficiently from some of the services to result in an overall fair distribution of costs. For example, the Director stated that, because of the technical nature of the Bureau's mission, certain service and support activities--such as instrument shops, libraries, and editorial preparation and publication of reports--all necessary to carry out the Bureau's mission, had been set up as central services available to all technical projects. These facilities, he stated, added to the competence of the Bureau to serve all customers, and although not all projects benefit

directly from these services, enough did to justify inclusion of the cost of the facilities as overhead.

On the basis of our review and the Director's comments, it appears to us that the costs of certain services are distributed as Bureau overhead on the basis of the availability of those services rather than on whether they actually benefit all productive projects. We recognize that the distribution of overhead costs according to a fixed formula is an acceptable method of cost allocation. However, we do not agree that the availability of a service justifies the allocation of the cost of that service to all productive projects regardless of benefit. Normally, it is desirable to allocate indirect costs among organizations or activities benefited because such allocations make it possible to obtain more accurate and informative costs of operating the organizations or of carrying on the activities. This method of allocation is particularly important where the cost of the work is reimbursable. Since a large part of the Bureau's work is reimbursable, the Bureau should account for costs in a manner which will most accurately reflect the cost of the work done.

The Director has stated that the Bureau has about 1,500 technical projects and one of the bases for establishing uniform overhead rates is the cost and paperwork which would be involved in developing and managing a system which would collect usage data to distribute costs to the 1,500 projects. He has added that it is worthwhile to develop such a system only if real inequities result from the use of uniform rates.

We are not suggesting that a system be developed to collect usage data for the purpose of distributing such costs directly to 1,500 projects. Inequities in the distribution of indirect costs result only when costs which are attributable to a particular project; a group of projects; or a particular operating section, division, or institute are accounted for as Bureau overhead costs and distributed to all productive projects. The Bureau's existing accounting system is adequate for the proper accumulation and distribution of indirect costs with little, if any, modification. For example, the annual rental for a building used only by one division should be charged to division

overhead and distributed only to the technical projects of that division, rather than being charged to Bureau overhead and distributed to all technical projects of the Bureau. (See p. 21)

With regard to the inequitable allocation of certain administrative labor costs, the Director has stated that the Bureau necessarily allows considerable flexibility to the divisions to determine items to be charged to division overhead and that time distribution in particular can be performed more accurately by the division chief and the employee rather than if made by the Budget or Accounting Division. The Director stated also that to make a Bureau-wide requirement that each administrative-type position be allocated to division overhead and never as a direct project charge, or vice versa, could result in charges in conflict with the principles of proper cost accounting.

We recognize that administrative labor costs may or may not be identifiable, in whole or in part, with specific projects. However, certain operating sections were arbitrarily charging such costs to technical projects or to division overhead. As a result, not all sections or divisions allocated these costs on a uniform basis.

We are not suggesting that all administrative labor costs be charged to either division overhead or technical projects exclusively or that the determination be made by the Budget or Accounting Division but that procedures be established to ensure that such costs are uniformly allocated by all sections on a systematic and consistent basis to the appropriate cost center with full regard to benefits received. Section administrative labor costs which can be identified with a particular project or group of projects should be charged directly to such projects and only those costs which cannot be identified with specific projects should be charged to division overhead.

With regard to the possibly unrealistic estimates of the useful lives of equipment, the Director of the Bureau stated that the determination of the useful life of research equipment items is a judgment that should be based on experience, expected use, and anticipated advances in the state-of-the-art and that the Bureau had depended to a

large degree on the technical advice of program personnel in determining useful lives of equipment. The Director stated also that, by the use of hindsight, it could be determined that the life of ECC equipment was formerly too short but that the same conclusion was not supported in the Bureau's records for other equipment.

In view of what the Director stated above concerning the useful life of research equipment, we believe that estimates of useful life should be reviewed on a periodic systematic basis to identify changing conditions which may have had a significant effect on the life of the equipment and that necessary adjustments in the rate of depreciation should be made when required.

The Director stated that he believed that the current lifetime determinations for ECC equipment were realistic. In this connection, a Bureau official advised us that the estimated useful life determinations for ECC equipment were revised in March 1969. The estimated useful life assigned to most ECC equipment has been extended from 5 to 10 years.

Regarding ECC's being charged a disproportionate share of depreciation expense, the Director of the Bureau stated that:

"The assertion that ECC was charged a disproportionate share of depreciation expense because depreciation included in division overhead was charged in addition to the direct charge for ECC equipment, assumes again that overhead has a precision that is not inherent in overhead distributions. A reverse position could be made if ECC equipment were combined with all other equipment. Then all other projects would be overcharged. We agree that more precision could be obtained in depreciation if each item were assigned to a project. This being impractical, we believe the present practice is a fair estimate of cost for the total division when you consider that the degree of benefit to each project from individual division overhead functions is at best a rough approximation."

We agree that all other projects in the division would be overcharged if ECC equipment were combined with all other equipment. If this were done, all other projects in the division would be absorbing part of the depreciation charge for ECC equipment, from which they would receive no benefit. This is the very reason why ECC is absorbing a disproportionate share of the division's depreciation charges. Under the present practice ECC is absorbing all the depreciation charges on its own equipment and is also being allocated a share of the depreciation charges for all other technical equipment in the division, from which it receives little benefit.

We agree also that it would be impractical to assign the depreciation of each item of equipment to a specific project and we are not recommending that this be done. However, the present practice of ECC's absorbing all the depreciation expense of its own equipment and a share of the depreciation expense for all other technical equipment in the division results in ECC's bearing a disproportionate share of the division's depreciation expense and in inequitable charges to its customers. It is feasible under the Bureau's existing accounting system to allocate non-ECC equipment depreciation expense only to non-ECC projects in the same manner that ECC equipment depreciation expense is allocated only to ECC projects. We believe that this procedure would result in a more equitable allocation of depreciation expense to projects within the division and in more equitable charges to ECC customers.

RECOMMENDATION TO THE SECRETARY OF COMMERCE

To account for indirect costs and allocate such indirect costs to the divisions and projects in a manner which will reasonably reflect the cost of the work, we recommend that the Bureau be required to review its methods of allocating such costs and make revisions in those instances where the methods are inequitable or inconsistent. Specifically, we recommend that (1) the Bureau continue to periodically review Bureau overhead costs to remove from Bureau overhead those costs which do not primarily benefit all Bureau divisions or projects, (2) Bureau procedures be clarified to ensure that administrative labor costs will be distributed on a uniform basis, (3) the determinations of

useful life of research equipment be reviewed periodically and revised when necessary, and (4) depreciation expenses be allocated to projects of the divisions located at Boulder, Colorado, on a more equitable basis.

CHAPTER 5

SCOPE OF REVIEW

Our work was directed primarily to accounting policies and practices of the Bureau which appeared to be in particular need of attention and included an examination of selected financial activities at the Bureau's headquarters in Gaithersburg, Maryland, and at the Bureau's Boulder Laboratories, Boulder, Colorado.

Specifically, we reviewed the Bureau's method of (1) determining charges to be made to customers of Electronic Calibration Center (ECC) calibration services, (2) assessing certain user charges to ECC customers, (3) accumulating and distributing Bureau overhead costs to divisions and projects, (4) allocating certain administrative labor costs among Bureau projects, and (5) accounting for and allocating depreciation expenses.

Our detailed work performed at Boulder involved review of records and discussions with officials of the Electronic Calibration Center of the Radio Standards Engineering Division. We reviewed also the Bureau's written policies and procedures and held discussions with Bureau officials in Gaithersburg, Maryland, pertaining to the operation of the accounting system and examined various accounting records and supporting documents to ascertain the practices being followed.

APPENDIXES



THE ASSISTANT SECRETARY OF COMMERCE
WASHINGTON, D.C. 20230

June 27, 1969

Mr. Henry Eschwege
Associate Director
Civil Division
General Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

This is in reply to your letter of February 27, 1969, requesting comments on a proposed report to the Congress on the "Need for Improvements in the Financial Management System of the National Bureau of Standards".

[See GAO note.]

We have reviewed the enclosed comments of the National Bureau of Standards and believe that they are appropriately responsive to the matters discussed in the audit report.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Larry A. Gobe".

Larry A. Gobe

Enclosure



U.S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
WASHINGTON, D.C. 20234

MAR 21 1969

IN REPLY REFER TO: 100.00

*

Mr. Henry Eschwege
Associate Director
Civil Division
U. S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Eschwege:

Your letter of February 27, 1969, forwarded a draft report to the Congress on the need for improvements in the financial management system of the National Bureau of Standards.

Attached are NBS comments on the report.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "A. V. Astin".

A. V. Astin
Director

Attachment

NBS Comments on
GAO Draft Report Entitled
Need for Improvements in
the Financial Management System
of the National Bureau of Standards

We have reviewed the subject report and present the following comments on the recommendations included therein. Comments on other material in the report is limited to items pertinent to the recommendations.

Findings and Recommendations

[See GAO note.]

Recommendation: " [See GAO note.] we recommend that charges for calibration and testing services by ECC be based on a uniform rate applied to all customers on the basis of direct labor hours which will result in the recovery of overhead costs applicable to the customers
[See GAO note.]

The Bureau agrees that charges for calibration and testing services should be based on a uniform rate, or a system which will achieve the effect of a uniform rate. The Bureau has recognized this principle and effective July 1967 the distribution of ECC overhead was revised, based on estimated workload, in an attempt to equalize charges. Charges were based on workload estimates and ECC overhead was distributed on these estimates. However, the DOD estimates proved significantly higher than the workload which was actually submitted. This factor was the source of the differential in the application of overhead costs.

Beginning July 1969 the Bureau will adopt a system which will assure the distribution of overhead among customers in proportion to actual direct workload.

The recommendation indicates that distribution of ECC overhead should be based on direct labor hours. Because the resolution of the problem is . . . difficult, we suggest that the recommendation permit other reasonable bases such as labor dollars, units of calibrations performed, etc.

[See GAO note.]

In considering the question of use of DOD funds via charges to DOD, we believe the history of the ECC should be considered. The Calibration Center was established primarily to meet the needs of the Department of Defense. In fact, it was originally intended that DOD finance directly the purchase of equipment and any recurring operating costs. (See BOB letter of February

14, 1955, copy attached.) Although it was subsequently decided, with BOB approval, that equipment would be purchased as an investment of the Working Capital Fund and its costs recovered through depreciation charges, the letter is cited to give perspective to the establishment of the Calibration Center.

Some of the most expensive features of the ECC operation were designed specifically to meet DOD needs, and it was decided that DOD should finance the unusual costs of providing for its requirements. Because the Calibration Center was established primarily to meet the special needs of DOD, the components of the ECC overhead were geared particularly to DOD needs, and equal distribution to the public and other government customers would have been inequitable. However, as the public workload grew it was recognized that equality of charges was desirable, and as pointed out above, action in this direction is underway.

Certain user charges not provided for by the Bureau - pg. 27-29

Recommendation: "We recommend, therefore, that the Bureau take action to ensure (1) that fees for services performed by the ECC for private industry customers include a factor for user charges [See GAO note.]

We recommend, also, that action be taken to ensure that other operating units of the Bureau which are providing services to private industry customers are recovering applicable user charges."

The Bureau agrees with the first of the two recommendations in this section of the report. Although a factor for user charges was overlooked in fiscal years 1966 and 1967 when establishing ECC fees for the public, the situation was recognized and action taken in FY 1968 to rectify it. In FY 1968 a factor was included to recover the user service charge for the public. A net profit was made with the 8 1/2% user service charge included, when one takes into consideration that in FY 1968 the ECC overhead was distributed on the basis of an estimated workload. As for 1966 and 1967 the Bureau believes that the heavy charges to the DOD were justified (as stated previously in comments on the Draft Audit Report) and although there was not a factor included for the user service charge, the loss was not as great as stated in the Draft Audit Report if calculations are based on data reflecting the manner in which overhead was distributed by NBS.

[See GAO note.]

APPENDIX I

Page 6

Fees for the public for calibrations performed in other organizations of the Bureau include a factor for user charges.

Need for improvements in accounting system - pg. 30-42

Recommendation that (1) Bureau overhead include only costs which benefit all Bureau divisions or projects, (2) administrative labor costs be distributed on a uniform basis, and (3) realistic estimates of the useful lives of capital equipment be established and depreciation be allocated to divisions and projects on a uniform basis.

Specific comments on the recommendation.

- (1) "Bureau overhead include only costs which benefit all Bureau divisions or projects ..." - pg. 30-35

The Bureau has invested considerable effort in developing practical techniques for allocating costs. The system in use is similar to the cost accounting systems of private industry whereby overhead costs are distributed among productive projects according to a fixed formula. Very few overhead services benefit all productive projects, but the services must be available to all, and one of the principles underlying an overhead distribution system is that every productive project benefits sufficiently from some of the services to result in an overall fair distribution of costs. NBS has approximately 1,500 technical projects. One of the bases for establishing uniform overhead rates is the cost and paperwork which would be involved in developing and managing a system which would collect usage data to distribute costs to these 1,500 technical projects. It is worthwhile to develop such a system only if real inequities result from the use of uniform rates.

The items included in the Bureau overhead program and the formula on which distribution of costs is based are under continual scrutiny to see that equity exists. In fiscal year 1968 the Bureau analyzed its overhead program using a classification similar to the breakdown shown on page 32 of the draft report. This analysis grouped projects in the following manner:

- Projects benefiting all technical projects
- Projects benefiting Washington/Gaithersburg and Clearinghouse technical projects
- Projects benefiting Clearinghouse only
- Projects benefiting Washington/Gaithersburg only
- Projects benefiting Boulder only
- Projects benefiting Washington/Gaithersburg and Boulder
- Special projects in which share is based on usage

The analysis showed that if separate rates had been established for Washington/Gaithersburg and Boulder, the rates would have been 49.64% and 48.72% respectively at that point in time. It was determined that the rates were close enough to continue the application of a single rate to avoid the clerical and analytic work which would have been required to administer separate rates for these locations.

The analysis also showed that the difference in rate between the Clearinghouse and the rest of NBS was great enough to justify continuation of a separate rate for the Clearinghouse. This difference resulted largely from the specialized nature of the Clearinghouse program, which does not use overhead services to the same extent as most of the other research programs. This is not the case with the Laboratory Astrophysics Division at Boulder, which is mentioned in the draft report. NBS does not believe it should penalize organizations located in non-governmental establishments and in the interest of equity, treats the Laboratory Astrophysics Division the same as other divisions at Boulder.

The draft report mentions instrument shops. Because of the technical nature of the Bureau's mission, certain service and support activities such as instrument shops, libraries, and editorial preparation and publication of reports, all necessary to carry out the Bureau's mission, have been set up as central services available to all technical projects. These facilities add to the competence of the Bureau to serve all customers, and although not all projects benefit directly from these services, enough do to justify inclusion as overhead.

A continuing effort is made to seek out those costs that can be eliminated from Bureau overhead financing and charged to either division overhead or directly to technical projects. Changes made in fiscal year 1969 reduced the distributable Bureau overhead costs by approximately \$1,500,000. A new system of overhead was established to charge Institute overhead to only those divisions in a particular Institute. A system of charging telephone and property management costs directly to users was worked out. These changes and the others made in 1969 have added more precision to our cost accounting, but they have retarded the production of accounting statements and have required additional clerical effort. It is necessary to weigh these desirable goals against one other, as more timely statements require the use of less precise but reasonably equitable distributions, and complex allocations require more time and increased cost.

Our deliberations in the area of cost allocation have not been unmindful of the provisions of Chapter 2, Section 8.10, of the GAO Policy and Procedures Manual. This section states in part that, where judgment factors are involved, meticulous procedures which do not produce materially more accurate results or provide other offsetting benefits should be avoided.

We believe our present overhead system is consistent with good accounting practice.

- (2) "Administrative labor costs be distributed on a uniform basis." - pg. 35-36

The NBS Administrative Manual Section 8.08.07 gives the following guidance as to appropriate charges to division overhead. "Those costs within a division which cannot be readily identified with individual projects or readily split between two or three projects are accumulated in a division overhead project." We believe that to make a Bureau-wide requirement that each administrative-type position be allocated to division overhead and never as a direct project charge or vice versa could result in charges in conflict with the principles of proper cost accounting. The recommendation assumes that administrative personnel do not at times contribute to technical projects. This is generally the case, but is not invariably correct.

The Bureau necessarily allows considerable flexibility to the divisions to determine items to be charged to division overhead. We believe that time distribution in particular can be performed more accurately by the Division Chief and the employee rather than if made by the Budget or Accounting Division. It appears that this recommendation is somewhat in conflict with item (1) which recommends distribution of Bureau overhead costs to only directly benefiting projects. Here it is recommended that distribution be made without regard to benefits received.

- (3) "Realistic estimates of the useful lives of capital equipment be established and depreciation expenses be allocated to divisions and projects on a uniform basis." - pg. 36-40

The determination of the useful life of research equipment items is a judgment that should be based on experience, expected use and anticipated advances in the state-of-the-art. The Bureau has depended to a large degree on the technical advice of program personnel in determining useful lives of equipment. By the use of hind sight we can now determine that the life of ECC equipment was formerly too short. This same conclusion is not supported in our records for other equipment. Currently we believe lifetime determinations for ECC are realistic.

The assertion that ECC was charged a disproportionate share of depreciation expense because depreciation included in division overhead was charged in addition to the direct charge for ECC equipment, assumes again that overhead has a precision that is not inherent in overhead distributions. A reverse position could be made if ECC equipment were combined with all other equipment. Then all other projects would be overcharged. We agree that more precision could be obtained in depreciation if each item were assigned to a project. This being impractical, we believe the present practice is a fair estimate of cost for the total division when you consider that the degree of benefit to each project from individual division overhead functions is at best a rough approximation.

GAO note: Deleted material relates to matters presented in the draft report which have been omitted from the final report.

DEPARTMENT OF COMMERCE OFFICIALS
RESPONSIBLE FOR ADMINISTRATION OF
ACTIVITIES DISCUSSED IN THIS REPORT

Tenure of office
From To

OFFICE OF THE SECRETARY

SECRETARY OF COMMERCE:

Maurice H. Stans	Jan. 1969	Present
C. R. Smith	Mar. 1968	Jan. 1969
Alexander B. Trowbridge	June 1967	Mar. 1968
Alexander B. Trowbridge (acting)	Feb. 1967	June 1967
John T. Connor	Jan. 1965	Jan. 1967

ASSISTANT SECRETARY FOR SCIENCE
AND TECHNOLOGY:

Myron Tribus	Mar. 1969	Present
Allen V. Astin (acting)	Feb. 1969	Mar. 1969
John F. Kincaid	Oct. 1967	Feb. 1969
Allen V. Astin (acting)	July 1967	Sept. 1967
J. Herbert Hollomon	May 1962	July 1967

NATIONAL BUREAU OF STANDARDS

DIRECTOR:

Lewis M. Branscomb	Sept. 1969	Present
Allen V. Astin	June 1952	Aug. 1969

ASSOCIATE DIRECTOR FOR ADMINIS-
TRATION:

Robert S. Walleigh	Sept. 1955	Present
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