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Substantial Losses Incurred Under The Standard Reference Material Program B-114821

National Bureau of Standards

Department of Commerce

UNITED STATES
GENERAL ACCOUNTING OFFICE

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NOV. 10, 1972

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

GENERAL GOVERNMENT DIVISION

B-114821

Dear Mr. Secretary:

The accompanying report presents our finding that the National Bureau of Standards, Department of Commerce, has incurred substantial losses under the Standard Reference Materials program. The report recommends the adoption of policies and procedures which, we believe, would help to achieve a self-sustaining operation.

This report is also being sent today to the Director, Office of Management and Budget; the Chairmen, House and Senate c1500
c1 - Committees on Government Operations; and the Chairmen, House c300
4 and Senate Committees on Appropriations.

Copies are being sent to the Assistant Secretary for Science and Technology; the Assistant Secretary for Administration; the Director, National Bureau of Standards; and the Director, Office of Audits.

Sincerely yours,

Victor L. Lowe

Director
General Government Division

The Honorable
The Secretary of Commerce

UNITED STATES GENERAL ACCOUNTING OFFICE
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ABBREVIATIONS

GAO General Accounting Office

OSRM Office of Standard Reference Materials

SRM standard reference materials

GENERAL ACCOUNTING OFFICE
REPORT TO THE
SECRETARY OF COMMERCE

SUBSTANTIAL LOSSES INCURRED
UNDER THE STANDARD REFERENCE
MATERIAL PROGRAM
1 National Bureau of Standards 126
2 Department of Commerce B-114821 74

DIGEST

WHY THE REVIEW WAS MADE

The National Bureau of Standards offers for sale about 700 different standard reference materials for the use of scientists; businesses; and Federal, State, and local government agencies in calibrating and evaluating measuring instruments, methods, and systems. (See p. 4.)

For the 4 fiscal years ended June 30, 1971, the Bureau incurred losses of about $2 million under the program. The General Accounting Office (GAO) reviewed the program to determine the reasons for the losses and the changes needed to operate the program on a self-sustaining basis to the extent practicable. (See p. 6.)

FINDINGS AND CONCLUSIONS

Most losses under the Standard Reference Materials program in recent years occurred because sales potential was not adequately considered and because the sales prices did not provide sufficiently for the write-off of unsalable standard reference materials. (See p. 6.)

Until fiscal year 1971 the Bureau generally produced an estimated 10-year supply of each standard reference material. On the basis of the Bureau's sales experience and an analysis of the inventories, GAO believes that a substantial portion of the quantities produced for a 10-year supply will not be sold and will result in inventory writeoffs. (See pp. 6 and 7.)

The Bureau's financial statements were materially misleading in presenting the results of standard reference material operations, and the cost accounting system did not insure that the sales prices would be based on actual production costs. (See p. 10.)

RECOMMENDATIONS

GAO recommends that the National Bureau of Standards:

--Adopt policies and procedures for determining the sales potential of proposed standard reference materials and the quantities to be produced.

--Adopt criteria for establishing sales prices that will provide for operating the program on a self-sustaining basis to the extent practicable.

--Establish criteria for determining the unsalable items included in the inventory at the end of each year.

--Write off unsalable items as a program cost.

--Include, as a cost in the statement of program results, the inventory writeoff of unsalable

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items and the applicable building depreciation and departmental overhead costs.

--Establish sales prices on the basis of actual production costs. (See pp. 9 and 13.)

CHAPTER 1

INTRODUCTION

The National Bureau of Standards, Department of Commerce, established its Standard Reference Materials program in 1906. The purpose of the program is to measure and certify the properties of materials for the use of science and industry in making onsite calibrations and evaluations of measuring instruments, methods, and systems.

A standard reference material (SRM) is described by the Bureau as any well-characterized material that can be used to calibrate a measurement system or to produce scientific data that can be readily referred to a common base. The program benefits science and technology; industry; commerce; and Federal, State, and local governments by making available SRMs which (1) facilitate the exchange of goods, (2) strengthen quality control, (3) help determine performance characteristics, and (4) encourage development at scientific frontiers.

The Bureau conducts the SRM program under authority provided by the United States Code (15 U.S.C. 272(f)(6)), which authorizes the Secretary of Commerce to prepare and distribute standard samples, such as those used in checking chemical analyses, temperature, color, viscosity, heat of combustion, and other basic properties of materials. The basic authority for SRM charges is provided by 15 U.S.C. 275a, as follows:

> "The Secretary shall charge for services performed *** except in cases where he determines that the interest of the Government would be best served by waiving the charge. Such charges may be based upon fixed prices or costs. The appropriation or fund bearing the cost of the services may be reimbursed, or the Secretary may require advance payment subject to such adjustment on completion of the work as may be agreed upon."

A Bureau employee advised us that, to the best of her knowledge, the Secretary has never waived the charge for SRMs.

On August 3, 1956, an amendment to the Bureau's Organic Act authorized the Bureau to use the working capital fund in performing its authorized functions, including the production of standard reference materials, and for any activity provided for in the appropriations which reimburse the fund (15 U.S.C. 278b (a) and (b)).

The Bureau prepares and disseminates SRMs under the direction of the Office of Standard Reference Materials (OSRM), Institute for Materials Research. At June 30, 1971, the Bureau offered for sale about 700 different SRMs in 12 major categories, ranging in price from $5 each for color charts to $1,155 each for propane samples. Although many of the recent SRMs represent a wide range of materials and prices, the SRMs in the ferrous and nonferrous metals categories accounted for about half the total dollar sales in fiscal year 1971.

The cost value of the SRMs in the Bureau's inventory, including work in process, at June 30, 1971, was about $7.8 million. Sales for the fiscal year amounted to about $1.2 million.

The costs to produce and distribute SRMs are financed through the Bureau's working capital fund. The Department of Commerce's administrative regulations require that, as a general policy, the fund be reimbursed for all costs of producing SRMs for sale to the public and for all costs, except building depreciation and certain overhead costs, of producing SRMs for sale to Government agencies. Because the sales of SRMs to Government agencies are less than 5 percent of total SRM sales, the Bureau, as an expedient, determines the cost of producing SRMs to the public and to Government agencies on the same basis.

SCOPE

We made our review at the Bureau's headquarters in Gaithersburg, Maryland. We analyzed SRM sales and inventories; examined correspondence and accounting records; reviewed Bureau policies, procedures, and studies; and talked with Bureau officials.

We had previously requested and received the views of the Bureau Director on our tentative conclusions, based on information and facts obtained at an interim stage of the review. The Director's views, as they relate to matters discussed in this report, have been appropriately considered in our conclusions and recommendations.

CHAPTER 2

IMPROVEMENTS NEEDED IN PROGRAM OPERATIONS

For the 4 fiscal years ended June 30, 1971, the operation of the SRM program resulted in substantial losses, as shown below:

	Fiscal year 1968	1969	1970	1971	Total
	(000 omitted)				
Revenues from sales	$1,014	$1,100	$1,174	$1,177	$4,465
Cost of sales	962	1,079	1,120	1,193	4,354
Net revenues	$ 52	$ 21	$ 54	$ -16	111
Less inventory writeoff of unsalable SRMs not treated as a cost of the SRM program by the Bureau					-2,156
SRM program losses for the 4-year period					-$2,045

The above losses are understated because the inventory of SRMs at June 30, 1970, in our opinion, included unsalable SRMs. We estimated that SRMs costing about $1.7 million were unsalable and that most of these SRMs had been in the inventory for 5 or more years.

The losses under the SRM program resulted primarily from (1) the Bureau's general policy of producing an estimated 10-year supply of each SRM, (2) the production of some SRMs of doubtful sales potential, and (3) the establishment of sales prices for SRMs which did not provide sufficiently for the writeoff of unsalable SRMs due to obsolescence or the production of excess quantities.

GENERAL PRODUCTION POLICY

Until fiscal year 1971, the Bureau generally produced an estimated 10-year supply of each SRM. This policy has resulted in unsalable SRMs because there was not enough pertinent data to estimate requirements for a 10-year period and because technological obsolecence or deterioration of SRMs occurred during the 10 years following production. In some cases, the Bureau produced more than an estimated 10-year supply of an SRM because of the possibility of losing the key scientist having the required highly specialized technical knowledge or because excess quantities of raw materials were on hand.

Beginning in fiscal year 1971, the Bureau has produced less than an estimated 10-year supply of some SRMs, which should result in smaller inventories of those SRMs and in lesser inventory writeoffs due to obsolescence.

PRODUCTION OF SRMs OF DOUBTFUL SALES POTENTIAL

The Bureau initiates projects for producing new and renewal SRMs on the basis of a priority listing prepared by OSRM. The Bureau's rating system for establishing priorities emphasizes program objectives, and cost recovery is not an overriding factor. Therefore, a proposed SRM of doubtful salability can be rated higher than one having greater sales potential.

The Bureau's treatment of sales potential as a nonessential factor began in 1964, when the Bureau committed itself to broadening the scope and strengthening the technical impact of the SRM program. Before 1964, the Bureau had primarily certified materials for chemical composition in support of the metal, ore, cement, glass, and rubber industries.

A Bureau report in October 1969 stated that two of the program's goals after 1964 were to produce (1) a more balanced output by moving into areas not previously covered, emphasizing areas of national concern, especially health, pollution control, and technological advances, and (2) more SRMs which advance the general ability of measurement science. As a result of this new program direction, sales potential diminished in importance as a criterion in the selection of SRM projects.

Justifications for selected new SRMs generally concentrated on the importance of the SRMs for a particular purpose. Although demand for the SRMs was frequently indicated by requests from industry, professional associations, or government agencies, the extent of the demand was not, in our opinion, adequately considered. The Chief, OSRM, told us that very little emphasis was placed on the sales potential of an SRM and cited the lack of market research capability as a reason.

The Bureau has made studies, attempting to resolve the incompatibility of the Department's requirement that costs be recovered through sales with the program's objectives of advancing science and technology and meeting national needs. The studies have generally supported the Bureau's objectives and have concluded that appropriated funds were needed to supplement the revenues realized through sales of SRMs.

In fiscal year 1971 the Bureau began to revise its method for determining the costs of SRMs recoverable through sales to exclude certain research costs on the basis that these costs should be covered by appropriated funds and that emphasis should be placed on producing SRMs for the advancement of science and technology and to meet national needs.

ESTABLISHMENT OF SALES PRICES

The Bureau established sales prices of SRMs with the expectation that most of the quantities produced for a 10-year supply would be sold. The sales price for an SRM was based on its unit production cost plus surcharges for obsolescence, building depreciation, and Bureau and departmental overhead costs.

Although the Bureau substantially increased the sales prices of SRMs in 1967 and 1969, the losses in recent years (see p. 6) show that the sales prices have not been sufficient to provide for the inventory writeoff of unsalable SRMs due to obsolescence or the production of excess quantities.

At the time of our review, the Bureau did not have a comprehensive policy for determining the sales potential of proposed SRMs or the quantities to be produced.

RECOMMENDATIONS

We recommend that the National Bureau of Standards adopt

- --policies and procedures for determining the sales potential of proposed SRMs and the quantities to be produced and

- --criteria for establishing sales prices of SRMs that will provide for operating the SRM program on a self-sustaining basis to the extent practicable.

CHAPTER 3

IMPROVEMENTS NEEDED IN REPORTING AND ACCOUNTING

Our review of the SRM program indicated significant deficiencies in the reporting of operating results and in the cost accounting practices. The Bureau's financial statements did not show the actual operating results of the SRM program, and its cost accounting practices did not insure that the sales prices of some SRMs would be based on their actual production costs.

FINANCIAL REPORTING

Fair presentation through full disclosure in financial reports requires observance of the standard prescribed by the Comptroller General, as follows:

> "All financial data presented shall be accurate, reliable, and truthful. *** All appropriate steps should be taken to avoid bias, obscurement of significant facts, and presentation of misleading information."

In our opinion, the Bureau has not conformed with the above standard because significant losses were excluded from the reported results of the SRM program operations.

According to the Bureau's financial statements for each of the 10 fiscal years ended June 30, 1971, a total net profit of about $716,000 was realized under the SRM program in the 10-year period. In its financial statements for fiscal years 1968 through 1970, the Bureau did not include inventory writeoffs of about $2,156,000 as a cost of the SRM program. Had the writeoffs been included in determining the operating results, a total net loss of about $1.4 million would have been reported for the 10-year period.

The writeoffs of unsalable SRMs do not appear to have been realistically determined during the 10 years. The inventory writeoffs amounted to less than $65,000 in each of 8 years compared with $1,568,751 in fiscal year 1970, which was made after a Bureau official examined the SRM inventory and the financing procedures. The Director of the Bureau informed us that the 1970 inventory writeoff was really an adjustment to conform with revised criteria effective in fiscal year 1971, which provides that certain research and development costs are not to be treated as production costs to be recovered through sales but are to be financed by appropriations.

The records, however, showed that the writeoff was "To eliminate obsolete materials from the standard reference materials inventory, and to write-off work-in-process that will not result in salable materials." Also, memorandums by the Chief, OSRM, stated that (1) $977,120 of the writeoff applied to the finished SRM inventory and represented the costs of SRMs which were unsalable according to obsolescence criteria and (2) the remaining $591,631 applied to work-in-process inventory and was determined on the basis of estimated nonrecoverable costs, rather than on an objective identification of the costs that should have been financed by an appropriation.

The Director informed us that the SRM inventory adjustments were combined with other adjustment accounts not readily identified with programs and were shown on the Bureau's financial statements as other expense, in accordance with the standard charts of accounts developed and used by the Department of Commerce. Because the inventory adjustments were not identified with the SRM cost of sales, management was not informed as to the SRM program's true gain or loss. In our opinion, excluding the inventory writeoffs does not conform to the principle of fairness of presentation of financial results of program operations.

The annual financial statements also did not include certain indirect costs as expenses of the program. The sales prices of SRMs include a factor, currently 5.8 percent of production and operating costs, for building depreciation and departmental overhead, in accordance with the requirements of Office of Management and Budget Circular No. A-25 and of Department of Commerce Administrative Order No. 203-5. Consequently, the statements have been misleading because indirect costs were not included as an expense.

COST ACCOUNTING PRACTICES

The Bureau's cost accounting practices did not result in recording the actual cost of producing some SRMs. When an SRM's cost exceeded the anticipated sales price, part of the cost was distributed to other SRMs for which sales prices could be established to provide for the recovery of more costs than actually were incurred.

The Bureau uses SRM Transfer Notices to transfer SRM work-in-process inventory to the completed SRM inventory, to summarize production quantities and costs, and to establish sales prices. In reviewing these notices, we observed that sometimes apparent unrelated costs were added to the production costs of a particular SRM and that related costs were not always assigned to SRMs.

For example, Transfer Notice 72-79, prepared on April 26, 1972, for SRM 1004, "Glass Spheres 34-120 Micron," showed accumulated costs of $25,300. However, costs assigned to this SRM for recovery through sales prices were $41,832. The increased costs included a transfer of $10,532, an unrelated cost, from SRM 718. The Transfer Notice indicated that Bureau officials considered that a selling price of about $825, based on the full production costs of SRM 718, would make the SRM too expensive for most potential users and they agreed on a selling price of $195, which necessitated transferring production costs to SRM 1004 or to other SRMs.

All SRMs require some material testing, such as homogeneity testing, and/or acceptance-testing work. Material-testing costs are accumulated in separate cost accounts and are assigned to SRMs on an inconsistent basis. We noted that material-testing costs had not been assigned to some SRMs. For example, a May 1970 Transfer Notice, number 71-2, for SRMs 1610 through 1613 did not assign any material-testing costs to these SRMs.

In his letter to us dated April 2, 1971, the Director agreed that such transactions occurred more often than was desirable and stated that:

"Action was taken in July of 1970 to eliminate such transactions. However, we have learned that the change over was not complete and that a number of improper notices were processed this fiscal year. We will pursue this matter further to assure that such transactions do not recur."

The Bureau's financial statements did not show the actual operating results of the SRM program because the statements did not include inventory writeoffs of about $2,156,000 and applicable building depreciation and departmental overhead costs.

RECOMMENDATIONS

We recommend that the National Bureau of Standards:

- --Establish criteria for determining the unsalable SRMs included in the inventory at the end of each year.
- --Write off the unsalable SRMs as a program cost.
- --Include, as a cost in the statement of SRM program results, the inventory writeoff of unsalable SRMs and the applicable building depreciation and departmental overhead costs.
- --Establish sales prices of SRMs on the basis of their actual production costs.