

099925

76-0417

099925

CPB

UNITED STATES  
GENERAL ACCOUNTING OFFICE

MAR 11 1976



UNITED STATES  
GENERAL ACCOUNTING OFFICE  
LIBRARY SYSTEM



# Opportunities For Reducing Office Copier Costs In Multi-Agency Federal Buildings

General Services Administration *AGC00017*

Agencies in multi-agency Federal buildings generally obtain office copiers independently of other building occupants. As a result, copier costs are increased and copiers are not efficiently utilized.

Centralized management of office copiers in Federal buildings could result in reduced costs by identifying copier needs for an entire building and determining the most economic and efficient method of fulfilling these needs.

099925

LCD-76-109

~~702910~~

MARCH 9, 1976



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

LOGISTICS AND COMMUNICATIONS  
DIVISION

B-146743

The Honorable Jack Eckerd  
Administrator of General Services

Dear Mr. Eckerd:

This is our report on opportunities for reducing office copier costs in multi-agency Federal buildings.

Centralized management of office copiers in multi-agency Federal buildings could result in reduced costs by identifying copier needs for an entire building and determining the most economic and efficient method of fulfilling these needs. Agencies in these buildings generally obtain copiers independently of other building occupants. As a result, copier costs are increased and copiers are not efficiently utilized.

*ASCO 0017*

The General Services Administration has established a program to provide common services to the occupants of Federal buildings. The inclusion of copier services in this program could result in reduced costs.

*HSE 300  
SE 00300  
HSE 0150  
SEN 0150*

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

Copies of the report are being sent to the House and Senate Committees on Government Operations; the House and Senate Committees on Appropriations; the House and Senate

B-146743

Committees on Post Office and Civil Service; the House and Senate Subcommittees on Treasury, Postal Service, and General Government Appropriations; the Joint Committee on Printing; and the Director, Office of Management and Budget. Copies are also being sent to your Director of Audits.

If you wish, we will be pleased to discuss with you or your staff the details of the report.

*R. G. Rothwell*  
*for* Fred J. Shafer  
Director

C o n t e n t s

	<u>Page</u>
DIGEST	i
CHAPTER	
1 BACKGROUND	1
Scope of review	1
2 OPPORTUNITIES FOR REDUCING OFFICE COPIER COSTS IN MULTI-AGENCY FEDERAL BUILDINGS	3
Responsibilities for copier manage- ment in multi-agency buildings	3
Management of office copiers in the CFOB	4
Alternative methods of providing copier services in the CFOB	5
Greater centralization and sharing of copiers	5
Reduction in number of copiers	6
Use of sensitized paper copiers	9
Contracts for copying services	10
3 CONCLUSIONS AND RECOMMENDATIONS	13
APPENDIX	
I Simulation techniques and assumptions made in the simulation of copiers in the CFOB	15
II Schedule of organizations and copiers in the CFOB included in the study	19
III Questionnaire on use of office copiers in the CFOB	21
IV CFOB copy volume and cost per month by floor under existing and alternate simulations	23

ABBREVIATIONS

CFOB	Cincinnati Federal Office Building
GPSS	General-Purpose Simulation System
GSA	General Services Administration
SSA	Social Security Administration
TAC	Tactical Air Command
WPAFB	Wright-Patterson Air Force Base

GENERAL ACCOUNTING OFFICE  
REPORT TO THE ADMINISTRATOR  
OF GENERAL SERVICES

OPPORTUNITIES FOR REDUCING OFFICE  
COPIER COSTS IN MULTI-AGENCY  
FEDERAL BUILDINGS  
General Services Administration

D I G E S T

The Government's cost for acquiring office copiers and related supplies has increased significantly in the last decade. GSA figures show that these costs have increased from \$38 million in 1964 to \$139 million in 1974-- an increase of 266 percent. (See p. 1.)

Centralized management of office copier needs in multi-agency Federal buildings could result in reduced costs by identifying copier needs for an entire building and determining the most economic and efficient method of fulfilling these needs. Agencies in these buildings generally obtain copiers independently of other building occupants. (See p. 3.)

A study of the manner in which copiers are being acquired and used in the Cincinnati Federal Office Building (CFOB) indicates that alternative methods of providing copier needs to agencies in the building could reduce costs considerably. (See pp. 4 and 5.)

GAO simulated the copying being done on the existing copiers in the CFOB and an alternate simulation to the existing copier situation. The alternate simulation encompasses greater centralization and sharing of copiers. A comparison of the existing and alternate simulations showed that annual copier costs would be reduced by \$50,900, or 26 percent, under the alternate simulation. (See p. 6.) Savings under the alternate simulation resulted primarily from a reduction in the number of copiers and the use of sensitized paper copiers. (See pp. 6 and 9.)

Another method of reducing copying costs is contracting for copying services. This involves obtaining bids for a specific cost per copy based on the needs of an entire building or buildings. The cost per copy

includes all equipment, supplies, repair, and maintenance. Using an estimated cost per copy provided by vendors, GAO calculated the copy costs of the CFOB for two situations. The first assumed one-for-one replacement of existing machines; the results showed \$60,500 annual savings. The second situation was based on the alternate simulation and showed savings of \$56,300. (See pp. 10 and 11.)

While this report illustrates the potential for reducing copier costs in the CFOB, the alternative methods of providing copier services could be applied to numerous other Federal buildings including multi-agency Federal buildings in major cities, large agency headquarters buildings, and large military buildings, with essentially the same result.

GSA has established a common services center program to provide supporting services and facilities for multi-agency Federal buildings in lieu of each agency's providing the same services or facilities for its own use. GSA should include copier services as a part of this program. (See p. 13.)

Considerable time is required to establish a common services center program in a Federal building because of the planning and inter-agency coordination involved. In order to realize economies and efficiencies in centralized management of copiers in multi-agency Federal buildings, GSA should select one or more buildings for testing the concept. (See pp. 13 and 14.)

#### RECOMMENDATIONS

GSA should:

1. --Initiate a test program for centralized management of copiers in one or more multi-agency Federal buildings.
2. --Include office copiers as a part of its common services center program.

3. --Publicize the above efforts and actively solicit the assistance of agency headquarters to induce participation by their field activities.
4. --Emphasize to agencies their responsibility to obtain the most economic copiers which meet their needs. (See p. 14.)

*office equipment*  
*Federal office buildings*  
*Equipment management*  
*Government owned equipment*  
*Cost analysis*  
*Cost effectiveness analysis*

## CHAPTER 1

### BACKGROUND

The Government's cost for acquiring office copiers and related supplies has increased significantly in the last decade. GSA figures show that these costs have increased from \$38 million in 1964 to \$139 million in 1974--an increase of 266 percent.

GSA awards Federal Supply Schedule contracts for office copiers and related supplies. Contractors distribute catalogs describing the various copiers and supplies available and the terms, conditions, and prices under which the copiers and supplies may be acquired by agencies. A variety of makes, models, and procurement alternatives are available under the contracts to meet agencies' needs for various amounts and types of copying. Agencies acquire copiers under Schedule contracts by placing orders directly with suppliers. Agencies are responsible for selecting the most economic copiers to meet their needs.

Federal Property Management Regulations allow GSA to provide centralized field duplicating services, including photographic reproduction and copying, in multi-agency Federal buildings. Whether these services will be provided is based on the results of a feasibility study, conducted by GSA, and subject to a determination by the Administrator. There is no requirement that building occupants obtain their needs from GSA should these services be provided.

There are 8,991 Government-owned or leased buildings which GSA manages.

### SCOPE OF REVIEW

Our review was conducted primarily at the Cincinnati Federal Office Building (CFOB), Cincinnati, Ohio. We contacted or visited the organizations in the building (see Appendix II) and, in some instances, the headquarters offices of these organizations to interview officials and examine records and documents. Work was also performed at Wright-Patterson Air Force Base, Dayton, Ohio, and discussions were held with representatives of the Air Force Tactical Air Command and the Air Force Logistics Command.



A computer simulation<sup>1</sup> of copier usage in the CFOB was performed after obtaining and analyzing general usage and inventory data on the copiers. Data for the simulation were obtained by placing forms on 42 copiers. The forms were to be completed each time a machine was used. After simulating the existing copier usage situation, we simulated a proposed alternate to the existing situation. Simulation techniques used are included in Appendix I.

Copiers and their use were discussed with representatives of several copier manufacturers. Copy cost and production data obtained from these representatives and from studies performed by other Government agencies were used in our simulations. We also made certain independent assumptions in our simulations which are shown in Appendix I.

A questionnaire on copy machine use was sent to officials of the various organizations in the CFOB. Appendix III contains a copy of the questionnaire and a tabulation of responses.

The use of equipment names in this report is to facilitate machine identification only and does not represent an endorsement or criticism of any equipment manufacturer. Although Dennison and Addressograph-Multigraph equipment was used in our alternate simulation, analyses may show that greater or lesser economies would result by using machines available from other suppliers.

---

<sup>1</sup>A technique whereby a model of the working system can be built in the form of a computer program. A complete system may be described by a succession of different models. These models can be adjusted and experimented with to test the effect of any proposed changes.

## CHAPTER 2

### OPPORTUNITIES FOR REDUCING OFFICE COPIER COSTS IN MULTI-AGENCY FEDERAL BUILDINGS

Centralized management of office copiers in multi-agency Federal buildings could result in reduced costs by identifying all copier needs for a building and determining the most economic and efficient way to meet these needs. Agencies in these buildings generally obtain copiers independently of other building occupants. As a result, the Government's copier costs are increased and copiers are not utilized efficiently.

A study of the way in which copiers are being acquired and used in the CFOB indicates that alternative methods of providing copier needs to agencies in the building could reduce copier costs considerably.

While this report illustrates the potential for reducing copier costs in the CFOB, we believe the alternative methods of providing copier services could be applied to numerous other Federal buildings, including multi-agency Federal buildings in major cities, large agency headquarters buildings, and military buildings, with essentially the same result.

### RESPONSIBILITIES FOR COPIER MANAGEMENT IN MULTI-AGENCY BUILDINGS

Federal Property Management Regulations state that centralized field duplicating services, including photographic reproduction and photocopying, may be provided by GSA in multi-agency Federal buildings. Whether these services will be provided is based on a feasibility study, conducted by GSA, and subject to a determination by the Administrator. There is no requirement that building occupants obtain their copier needs from GSA should these services be provided.

In January 1971, GSA, in cooperation with other agencies, agreed on a pilot project for GSA to provide common services to agencies in the Arcade Plaza Building, Seattle, Washington. These services included printing and duplicating services, mail and messenger services, procurements, supply room for certain administrative items, and a common services library.

The GSA printing and duplicating activity has administrative control over copiers located in the Arcade Plaza Building with the exception of copiers controlled by the

then Office of Transportation. An August 1972 report on the evaluation of the pilot project states that copying in the Arcade Plaza Building is performed on copiers located in the agency offices. Although GSA exercises administrative control over the copiers--procuring and furnishing of supplies, verifying meter readings, certifying invoices for payment--GSA officials advised us that not enough consideration has been given to more efficient use of copiers through sharing.

GSA has established a common services center program to provide support services and facilities for other multi-agency Federal buildings.

#### MANAGEMENT OF OFFICER COPIERS IN THE CFOB

There is no centralized management of office copiers in the CFOB. Although some copiers are shared, agencies generally have justified acquiring copiers to meet their own needs without considering the needs of other organizations in the building or whether their needs could be satisfied by another agency's copier. The result is that copiers have proliferated throughout the building increasing their cost and causing inefficient copier use.

The CFOB is a 12-story building located in downtown Cincinnati. The building houses 51 government organizations. The CFOB is managed by GSA and includes a GSA printing plant in the sub-basement which is authorized by the Joint Committee on Printing.

Equipment in the GSA printing plant includes a Xerox Model 3600 I copier ostensibly for the use of the tenants in the entire building. From July 1, 1973, through March 5, 1974, about 182,000 copies were made on the GSA copier by nine organizations. One organization accounted for 126,000, or 69 percent, of the copies made. Some organizations advised us they did not know the copier was available, others said its location was inconvenient--in the sub-basement attainable by only 3 of 12 building elevators--or the charge per copy was too high.

There is no central inventory of office copiers in the CFOB. To obtain an inventory of the copiers in the building, we visited the tenant organizations and determined there were at least 42 copiers.

Generally, the more copies made on a single machine the less expensive the copies become and the more efficient use made of the copier. For example, on the 8th floor in the

CFOB there are eight copiers used by eight different organizations. Our simulation of these copiers showed a monthly volume of 27,616 copies at an equipment cost of \$1,245. This volume could easily be handled by one relatively fast copier. A total of 27,616 copies per month on a Dennison High-Speed copier would cost \$470. Although personnel costs of traveling to and from the copier and waiting would increase, the costs would not be sufficient to offset the machine cost reductions. Personnel costs are further discussed on pages 6 and 7.

#### ALTERNATIVE METHODS OF PROVIDING COPIER SERVICES IN THE CFOB

We considered alternative methods of providing copier services to organizations in the CFOB to determine the potential for reducing costs. The methods considered were greater centralization and sharing of copiers and contracting for copying services.

#### Greater centralization and sharing of copiers

We simulated the copying done on existing copiers in the CFOB. We then simulated an alternate to the existing situation. The alternate simulation encompasses greater centralization and sharing of copiers. A comparison of the existing and alternate simulations showed that annual copier costs could be reduced by \$50,900, or 26 percent, through greater centralization and sharing.

We do not maintain that the alternate simulation is necessarily the best copy system for the CFOB. It is an alternative to the present system and indicates the potential for reducing copier costs.

Our simulations are based on the 42 copiers found in the CFOB and the usage logged on the copiers by users from July 8 to 12, 1974. Our simulation of the copying done on the existing copiers showed 272,921 copies made by 22,670 users in a monthly period. In the alternate simulation, all existing copiers were eliminated and replaced with copiers which would satisfy agencies' needs on a floor-by-floor basis. The number of copiers was reduced from the existing 42 to 13 copiers and a duplicator. The duplicator was placed on the 6th floor to be used by the entire building whenever seven or more copies of an original document were to be made. Each floor, other than the basement and sub-basement, was given at least one copier. The alternate

simulation showed 275,905 copies made monthly by 22,694 users<sup>1</sup>. The copy volume and cost for each floor in the CFOB under the existing and alternate simulations are shown in Appendix IV.

The monthly copier costs and projected annual costs under the existing and alternate simulations are shown in the following schedule.

	<u>Existing simulation</u>		<u>Alternate simulation</u>		<u>Increase or (decrease)</u>	
	<u>Monthly</u>	<u>Annual</u>	<u>Monthly</u>	<u>Annual</u>	<u>Monthly</u>	<u>Annual</u>
Machine cost <sup>a</sup>	\$10,499	\$125,988	\$ 4,648	\$ 55,776	\$(5,851)	\$(70,212)
Personnel cost	6,006	72,072	7,615	91,380	1,609	19,308
Totals	<u>\$16,505</u>	<u>\$198,060</u>	<u>\$12,263</u>	<u>\$147,156</u>	<u>\$(4,242)</u>	<u>\$(50,904)</u>

<sup>a</sup>Machine cost, in this context and all following uses, refers to either the rental of the copier or depreciation and maintenance, plus paper and supplies.

As shown above, annual copier costs under the alternate simulation would be reduced by \$50,900, or 26 percent. Although personnel costs would increase because of the time involved in traveling to and from copiers, the costs would not be sufficient to offset the savings.

Savings under the alternate simulation resulted primarily from (1) reduction in the number of copiers and (2) use of sensitized paper copiers.

#### Reduction in number of copiers

The 42 existing copiers were reduced to 13 copiers and a duplicator in the alternate simulation. The duplicator would be used whenever seven or more copies of an original were to be made. Of 275,905 copies made in the one-month period, 132,872 were made on the duplicator. The copies on the duplicator were made by 2,293 of the total 22,694 users, accounting for 48 percent of the copies, but only 10 percent of the users. Therefore, copiers located on each floor would accommodate 90 percent of the users making 52 percent of the copies. This data, along with the average number of copies per user, is shown in the following schedule.

---

<sup>1</sup>The differences in the number of existing simulation copies and users and the number of alternate simulation copies and users results from random copier usage as generated by the computer program used to perform the simulations.

	<u>No. of copies</u>	<u>No. of users</u>	<u>Percent of copies</u>	<u>Percent of users</u>	<u>Average copies per user</u>
Duplicator	132,872	2,293	48	10	57.9
Copiers	143,033	20,401	52	90	7.0
Total	<u>275,905</u>	<u>22,694</u>	<u>100</u>	<u>100</u>	

All copiers and the duplicator were considered to be self-service machines. If the duplicator requires a full time operator the savings under the alternate simulation is more than sufficient to provide for an operator.

The alternate simulation showed that personnel cost to make copies would increase, but not enough to offset the reduction in machine costs. Personnel costs increased \$1,609 a month--\$6,006 to \$7,615--under the alternate simulation. However, monthly machine costs decreased by \$5,851--\$10,499 to \$4,648.

In response to a questionnaire sent to the organizations in the CFOB, officials stated that they would not require their employees to use a centralized duplicator because increased personnel cost would outweigh any savings which could be achieved. Our alternate simulation showed an average time per duplicator user from the time the person leaves his desk until he returns of 5.3 minutes. This is about twice the average time per copy machine user of 2.5 minutes in the existing simulation. The duplicator user, however, averaged 57.9 copies per user, about 5 times the number of copies per user in the existing simulation.

A comparison of various personnel and machine data under the existing and alternate simulations is shown in the following schedule.

	<u>Ave. time per user (min.)</u>	<u>Mandays per month</u>	<u>Monthly personnel costs</u>	<u>Monthly machine costs</u>
Alternate	3.2	152	\$7,615	\$ 4,648
Existing	<u>2.5</u>	<u>118</u>	<u>6,006</u>	<u>10,499</u>
Increase or (decrease)	<u>.7</u>	<u>34</u>	<u>\$1,609</u>	<u>\$(5,851)</u>

Although monthly personnel costs are increased by \$1,609, or 27 percent, machine costs are reduced by \$5,851, or 56 percent.

Other benefits may result from a reduction in the number of copiers. Indications are that eliminating copiers causes

a certain degree of inconvenience. Employees may reevaluate whether a copy is really needed or whether some other way of obtaining a copy could suffice, such as an extra carbon paper copy.

GSA in its Copying Equipment Handbook points out that:

"Before the time when it became easy to make a copy of almost anything, our official copying was limited to those documents needed by someone, or required for some purpose. That is, the function for which copies were needed was either impossible to accomplish or made extremely difficult without such copies. Although these valid purposes still exist, a large portion of all copying done today is for convenience.

\* \* \* \* \*

"Convenience copying is not necessarily bad if it saves time. It is, however, often allowed to progress to the point of producing paperwork that is either wasted or never disposed of. What was meant to be a laborsaving device has resulted in the expenditure of more man-hours than was ever before needed for producing copies."

A study conducted by Headquarters, Air Force Logistics Command, in 1972 illustrates this. The monthly volume for five high-speed centralized copiers was 470,479 copies. One of the machines producing 116,652 copies was eliminated. The resulting monthly volume on the four remaining copiers was 383,972 copies, a net reduction of 86,507 copies. The study states:

"To a large extent, this reduction can be attributed to a 'convenience elasticity' of demand; that is, an amount of non-essential work which is generated increasingly with a greater convenience of access to the reproduction facility. Once the convenient facility was eliminated, the need for reproduction services dropped even though less convenient facilities were available."

By reducing the number of copiers, it is also likely there would be a reduction in the different brands of copiers allowing a reduction in the stock of various brands of supplies for an installation. It should also increase the

quantity of a particular brand of supplies ordered, which may result in a larger quantity price discount for supplies. We did not consider these savings in our simulations.

Use of sensitized paper copiers

Plain paper copiers, except in some high volume instances, are generally more expensive than sensitized paper copiers. The Social Security Administration had about 1,770 copiers which produced nearly 233 million copies in 1973 at a cost of \$4.7 million. According to Social Security officials, about 89 percent of their copiers use sensitized paper. They estimate that the use of sensitized paper copiers rather than plain paper copiers reduced costs by about \$1.2 million.

In our alternate simulation of the CFOB, we replaced all existing copiers with sensitized paper copiers. Plain paper copying would be available through the duplicator on the 6th floor. To determine if a valid requirement for plain paper copies existed in the CFOB, we sent a questionnaire to officials of the 51 organizations. We asked if they had a requirement for plain paper copiers, and if so, what it was. Of the 41 responses to this question, 16 stated they had a requirement for plain paper copiers and 25 said they did not (three of the 25 responses which stated they had no requirement for plain paper commented that a sensitized paper copier would not be used). The following list shows the requirements for plain paper stated in the 16 responses.

	<u>No. of responses</u>
--Quality of copy for outside correspondence	6
--Ability to write on plain paper copies	3
--Durability or life of copy	2
--Needed for legal documents	2
--Needed to make transparencies	1
--No reason given	<u>2</u>
	<u>16</u>



As shown above, the primary reason for plain paper copies is the desired copy quality for outside correspondence. However, the acceptability of the copy quality of sensitized paper is indicated by the considerable use of sensitized paper copiers (89 percent) by the Social Security Administration. In addition, a representative of a major automobile manufacturer told us they use only sensitized paper copiers.

The GSA Copying Equipment Handbook states:

"Many users of copying processes have allowed their sense of value to be distorted in relation to the degree of quality and versatility actually needed. Is it necessary that the copier be able to pick up certain colors or solids? Is a print-like quality important to the use of the copy? Does the fact that the image is grey rather than black make any real difference? Manufacturers have been quick to foster this desire for perfection, and competition has encouraged the hard-sell tactics. The main point for managers to recognize is that most copies are of a routine nature, and need only meet the requisites for the purpose intended, no more, no less."

The ability to write on plain paper copies was the second most frequent requirement in the responses. Current sensitized paper copies may be written on, although they may not erase as cleanly as plain paper. A copy which has been written on, however, is seldom used as a final distributed document.

Regarding the durability or life of sensitized paper, a Social Security Administration official said the archival life of sensitized copies is 103 years. Those rare documents which require retention beyond 103 years should, obviously, be accorded special treatment.

On the basis of impressions received during our review, it appears that a plain paper requirement is largely a matter of personal preference primarily because sensitized paper copies look, feel, and smell different than plain paper copies. In our opinion, these considerations are not sufficient to offset the potential savings available by using sensitized paper copiers to meet normal needs.

#### Contracts for copying services

Another method of reducing copying costs has been used by the Tactical Air Command (TAC) of the U.S. Air Force. This involved asking manufacturers, dealers, and vendors of copier equipment to bid a specific cost per copy for the

entire copy volume of a single TAC base, a group of TAC bases, or the entire command.

The manufacturers were provided a list of the installations to be included in the bid. Also, the number of machines required and an estimated annual copy volume was included in the invitation to bid. The cost per copy was to include all equipment, supplies, repair and maintenance to provide copy service for TAC installations at about 300 copier locations.

The following schedule shows TAC's copying costs in fiscal year 1973 before the bidding procedure was used and for fiscal year 1974 using the cost per copy bidding concept.

	<u>Fiscal year 1973</u>	<u>Fiscal year 1974</u>	<u>Increase or (decrease)</u>
Copies	34,491,763	36,116,203	1,624,440
Cost	\$881,375	\$702,829	(\$178,546)
Cost per copy	\$0.025	\$0.019	(\$0.006)

As shown above, about 1.6 million more copies were made for \$178,000 less cost. No personnel costs are included.

A TAC representative said he considers this the best way to procure copies. He stated that the method has not received 100 percent approval in TAC because of the use of sensitized paper copiers and the minor centralization involved. The TAC representative stated that sensitized paper fulfills TAC's needs and too many agencies buy plain paper copies, not just copies.

We discussed the above concept with representatives of various copy machine manufacturers in relation to the CFOB. Some representatives told us they would welcome the opportunity to provide services on this basis and made informal estimates of about \$.02 per copy. This would include machines, supplies, and service. We were also told that additional machines would be provided during peak usage periods for the same cost per copy.

Using the figure of \$.02 per copy as an estimate, we calculated the copy costs of the CFOB for two situations.

The first assumed one-for-one replacement of existing machines by copiers producing copies at \$.02 each. The copy volume and personnel cost remained the same and no

duplicator was used. The results were:

	<u>Existing simulation</u>	<u>\$.02 per per copy</u>	<u>Monthly increase or (decrease)</u>	<u>Annual increase or (decrease)</u>
Volume	272,921	272,921	-0-	-0-
Personnel cost	\$6,006	\$6,006	-0-	-0-
Machine cost	\$10,499	\$5,458	(\$5,041)	(\$60,492)
Total cost	\$16,505	\$11,464	(\$5,041)	(\$60,492)

The second situation was based on the alternate simulation. In this case, seven or more copies are made on the duplicator and less than seven copies on shared copiers at \$.02 per copy. The following schedule shows the cost savings of this concept compared to the existing simulation. Personnel costs of the \$.02 per copy machines are the same as in our alternate simulation.

	<u>Existing simulation</u>	<u>\$.02 per copy plus duplicator</u>	<u>Monthly increase or (decrease)</u>	<u>Annual increase or (decrease)</u>
Volume	272,921	275,905	2,984	35,808
Personnel cost	\$6,006	\$7,615	\$1,609	\$19,308
Machine cost	\$10,499	\$4,198	(\$6,301)	(\$75,612)
Total cost	\$16,505	\$11,813	(\$4,692)	(\$56,304)

The annual savings indicated by the two examples are \$60,492 under the existing simulation and \$56,304 under the alternate simulation. The reduced savings under the alternate simulation are due to increased personnel cost.

## CHAPTER 3

### CONCLUSIONS AND RECOMMENDATIONS

We believe that centralized management of office copiers in multi-agency Federal buildings could result in reduced cost by identifying all copier needs for a building and determining the most economic and efficient way to meet these needs. Agencies generally obtain their copier needs independently of other building occupants. As a result, the Government's copier costs are increased and copiers are not efficiently utilized.

Copier costs, when taken individually, may not seem significant; however, when considered Government-wide, the cost is significant. Alternative methods of providing copier needs to agencies in the CFOB showed that costs could be reduced by as much as \$60,000 annually. If a savings of this magnitude could be achieved in a number of the multi-agency Federal buildings, the annual reduction in copying costs would be considerable.

We recognize that agencies may be desirous of maintaining their independence under traditional self-supporting arrangements. Therefore, there is a need for GSA to (1) publicize opportunities for cost reductions and (2) actively solicit the assistance of agency headquarters offices to induce participation by their field activities in GSA efforts at centralized management of office copiers.

GSA has established a common services center program to provide supporting services and facilities for multi-agency Federal buildings in lieu of each agency's providing the same services or facilities. We believe GSA should include copier services as a part of its common services center program.

Considerable time is required to establish a common services center program in a Federal building because of the planning and interagency coordination involved in determining the various common services to be provided and reaching agreement among the interested parties. Therefore, we believe that, in order to realize the economies and efficiencies in centralized management of copiers in multi-agency Federal buildings, GSA should select one or more buildings for testing the concept.

The Social Security Administration and TAC have realized considerable savings from the use of sensitized paper copiers. On the basis of impressions received during our

review, it appears that a preference for plain paper copiers should not outweigh the potential savings from using sensitized paper copiers for normal use.

We recommend that GSA:

- Initiate a test program for centralized management of copiers in one or more multi-agency Federal buildings.
- Include office copiers as a part of its common services center program.
- Publicize the above efforts and actively solicit the assistance of agency headquarters to induce participation by their field activities.
- Emphasize to agencies their responsibility to obtain the most economic copiers which meet their needs.

SIMULATION TECHNIQUES AND  
ASSUMPTIONS MADE IN THE  
SIMULATION OF COPIERS IN THE CFOB

SIMULATION TECHNIQUES

We notified organization officials in the CFOB by letter of our plans to do the copier simulation and solicited their cooperation in ensuring that the logs to be placed on their copiers would be completed accurately. We then conducted a preliminary simulation of the copiers to verify that the usage logs would provide sufficient data.

For the actual simulation data gathering, we visited each organization and explained the logs and asked that meter readings be taken, when possible, at 8:00 a.m. on July 8, 1974, and at the close of business on July 12, 1974. The logs were collected on July 15.

The data on the logs were verified to the extent practical. A computer program was written to ensure that all times entered were valid times, that pay grades were reasonable, and that the number of originals times the number of copies per original equaled the number of copies made. The data on the logs were transferred to punched cards.

The data which were logged were entered into the INFONET system from punched cards and projected for a monthly period. We used the General-Purpose Simulation System (GPSS) implemented on the Computer Sciences Teleprocessing System to simulate copying in the CFOB. A separate model was developed for each copier which computed the following data.

Machine and related cost data

1. Machine rental or depreciation
2. Supply cost
3. Paper cost

Personnel cost data

1. Cost of walking to and from the copiers
2. Cost of waiting for copier to be available
3. Cost of making copy

Other data

1. Number of copies made
2. Times paper had to be changed
3. Number of users
4. Grades of users
5. Total time to make copies
6. Number of original copies
7. Special features of copiers which were used

ASSUMPTIONS

The models of copy machines are intended to show that an alternative to the existing situation is available which could realize a cost savings. The following assumptions were made in our GPSS models.

1. We assumed centralized management of copiers in the CFOB. All users making seven or more copies per original traveled to a duplicator on the sixth floor. Users making six or less copies used copiers located on their own floor with the exception of the sub-basement. Copies originating from the sub-basement were made on two copiers on the first floor.

2. Walking speed of all users was 4.2 feet per second. This was based on an average of data in copier studies conducted by the Xerox Corporation and the Army.

A. No consideration was given to any delays in traveling to or from a copier such as visiting or breaks.

3. Walking distances were measured by Roll-A-Tape from all users' rooms to copiers.

A. If users came from a floor other than the floor on which the copiers were located, stairwell measurements were used rather than elevators.

4. Pay grades are the average for GS employees from Bureau of Labor Statistics data.

- A. Summer help was assigned a GS-1 grade.
  - B. All pay grades other than wage-board included fringe benefits.
  - C. Military pay was based on data supplied by the Air Force Logistics Command.
5. Usage of equipment special features, such as label and transparency making features and the two-sided copying feature, was recorded, but was not included in the copier models.
6. The time between arrival of copier users was randomly determined based upon usage patterns recorded on the 5-day logs.
- A. Since machine use before 8 a.m. and after 5 p.m. was negligible, data was adjusted to a 9-hour day.
  - B. The time between users was used to compute the time a user left his office to make a copy. Time in the model indicates the total time spent from the time the user left his office until he returned. Time to and time from the copier was identical.
7. There is no priority system for users with less pages to be copied or with higher grades.
- A. Service is on a first-come, first-served basis.
  - B. Time to use a machine includes a five-second orientation and preparation time for each original, the machine time to make the first copy of each original, and the machine time to make copies after the first copy.
  - C. All copies made by a user are either long or short paper for that user.
  - D. A user for one visit to the machine makes the same number of copies from each original he brought to the machine for that visit.
8. The user is delayed to refill the paper in the machine when a minimum number of sheets or inches of paper remain in the machine.



- A. The paper is refilled after all copies from an original are made.
- B. The time is charged to the user at the copier at that time.

9. Paper is changed from long to short or from short to long on a machine with one size paper tray when a user needs different paper than used by the previous user.

10. Costs include rental or depreciation plus maintenance, personnel costs, and supply costs.

- A. Electricity and space costs are not included.

11. The results are dependent on the data logged by the machine users. We had no control over how accurately the logs were completed.

- A. We compared the logged copies to the metered copies on machines with copy meters.
- B. Usage on a few machines was very low.
- C. We assumed the usage on the 5-day logs to represent the actual use.

12. In the alternate simulation, all existing copiers were replaced with Dennison copiers using sensitized paper and an AM4250 high-speed duplicator.

13. Number of originals, number of copies, pay grade, distance to machine, and special features are independent based on a preliminary survey.

- A. No quantity discounts were taken either for machine rental or supplies.
- B. Replacement copiers were located in rooms which had existing copiers to facilitate distance measurement. They were located as close as possible to the high-volume existing copiers.
- C. The AM4250 duplicator is located on the sixth floor, which approximates the median usage point, for seven or more copies per original.
- D. There was no change in grade of users due to replacement of copiers.

SCHEDULE OF ORGANIZATIONS  
AND COPIERS IN THE CFOB  
INCLUDED IN THE STUDY

<u>FLOOR</u>	<u>ORGANIZATION</u>	<u>COPIER/MODEL</u>
Sub-basement	General Services Administration Printing Plant	Xerox 3600I
1st	General Services Administration Self Service Store	3M-107
1st	Railroad Retirement Board	3M-107
1st	Veterans Administration	Xerox 660
1st	Internal Revenue Service Office-Chief, Taxpayers Service Branch	Xerox 660
2nd	Armed Forces Entrance Examining Station	SCM-111
2nd	Armed Forces Entrance Examining Station	Bruning-250
2nd	Social Security Administration Information and Claims	Dennison-Econ- omist
2nd	Social Security Administration Information and Claims	Dennison-Econ- omist
2nd	Social Security Administration Information and Claims	Xerox 660
2nd	United States Marine Corps Recruiting Station	3M-209
3rd	National Labor Relations Board	SCM-111
4th	Occupational Safety and Health Administration	Xerox 4000
4th	United States Coast Guard Inspection and Captain of the Port	Royal Citation
4th	United States Coast Guard Director of Auxillary Eastern Region	A.B. Dick-625
5th	Federal Mediation and Conciliation Service	3M-107
5th	Small Business Administration	Xerox 660
5th	Internal Revenue Service - District Director	Remington R-2
5th	Interstate Commerce Commission Bureau of Operations	Sunbeam-110
6th	Internal Revenue Service - Regional Commissioner	Xerox 3600-I

## APPENDIX II

## APPENDIX II

6th	Internal Revenue Service - Regional Commissioner	Xerox 3600-III
6th	Internal Revenue Service - Regional Commissioner	Remington R-2
6th	Social Security Administration - Bureau of Hearings and Appeal	Xerox 660
7th	Equal Employment Opportunity Commission	SCM-211
7th	Internal Revenue Service - Regional Counsel	Xerox 4000
7th	United States Navy Recruiting	Xerox 914
8th	United States General Accounting Office	Xerox 4000
8th	United States Customs Service	3M-107
8th	United States Secret Service	Savin-215
8th	Selective Service System	Xerox 660
8th	United States Army Recruiting	Remington R-3
8th	Federal Energy Administration	SCM-111
8th	Department of Commerce - Inter- national Business Administration	3M-Thermofax
8th	Internal Revenue Service - Regional Inspection	Xerox 4000
9th	National Institute of Occupational Safety and Health	3M VHS-R
9th	Housing and Urban Development Insuring Office	Xerox 4000
9th	Housing and Urban Development Insuring Office	Xerox 2400
9th	Defense Contract Administration Service District	Xerox 2400
10th	Drug Enforcement Agency	3M-209
10th	Army Corps of Engineers	3M VHS-R
10th	Army Corps of Engineers	Xerox 4000
10th	Civil Defense	3M VQC

Total organizations - 35

Total copiers - 42

QUESTIONNAIRE ON  
USE OF OFFICE COPIERS  
IN THE CFOB

1. Our survey indicates that over \$200,000 per year, including machine and personnel costs, are spent making copies in the CFOB. A savings could be realized by using a centralized high-speed duplicator. If such a duplicator were centrally located in the CFOB to be used whenever seven or more copies of an original were to be made, would you require your personnel to use it?
  - Yes 16
  - No 24
  - If no, why not?
  
2. Would you be agreeable to the General Services Administration managing the copy machine in your office?
  - Yes 8
  - No 28
  - If no, why not?
  
3. If GSA were to manage all copy machines in the CFOB, would you prefer:
  1. Cost paid by GSA 24
  2. Cost reimbursed to GSA by user 9
  
4. In many instances, sensitized paper copiers are less expensive than plain, or bond paper copiers. Do you have a requirement for a bond paper copier?
  - Yes 16
  - No 25
  - If yes, what is the requirement?
  
5. Would you agree to use a sensitized paper copier if it were conveniently located?
  - Yes 21
  - No 18
  - If no, why not?
  
6. Are you satisfied with your copy service as it exists now?
  - Yes 29
  - No 11
  - If no, why not?

7. If you now have your own copiers, do you personally receive the billing for the machine directly from the manufacturer?

Yes 10  
No 22

8. If the billing for your copier is sent to another office for payment, do you receive notice of the number of copies made each month and their cost?

Yes 7  
No 16

9. Have you or your staff used the copier located in the GSA Printing Plant to obtain copies? This question refers to copies only, not printing or duplicating work.

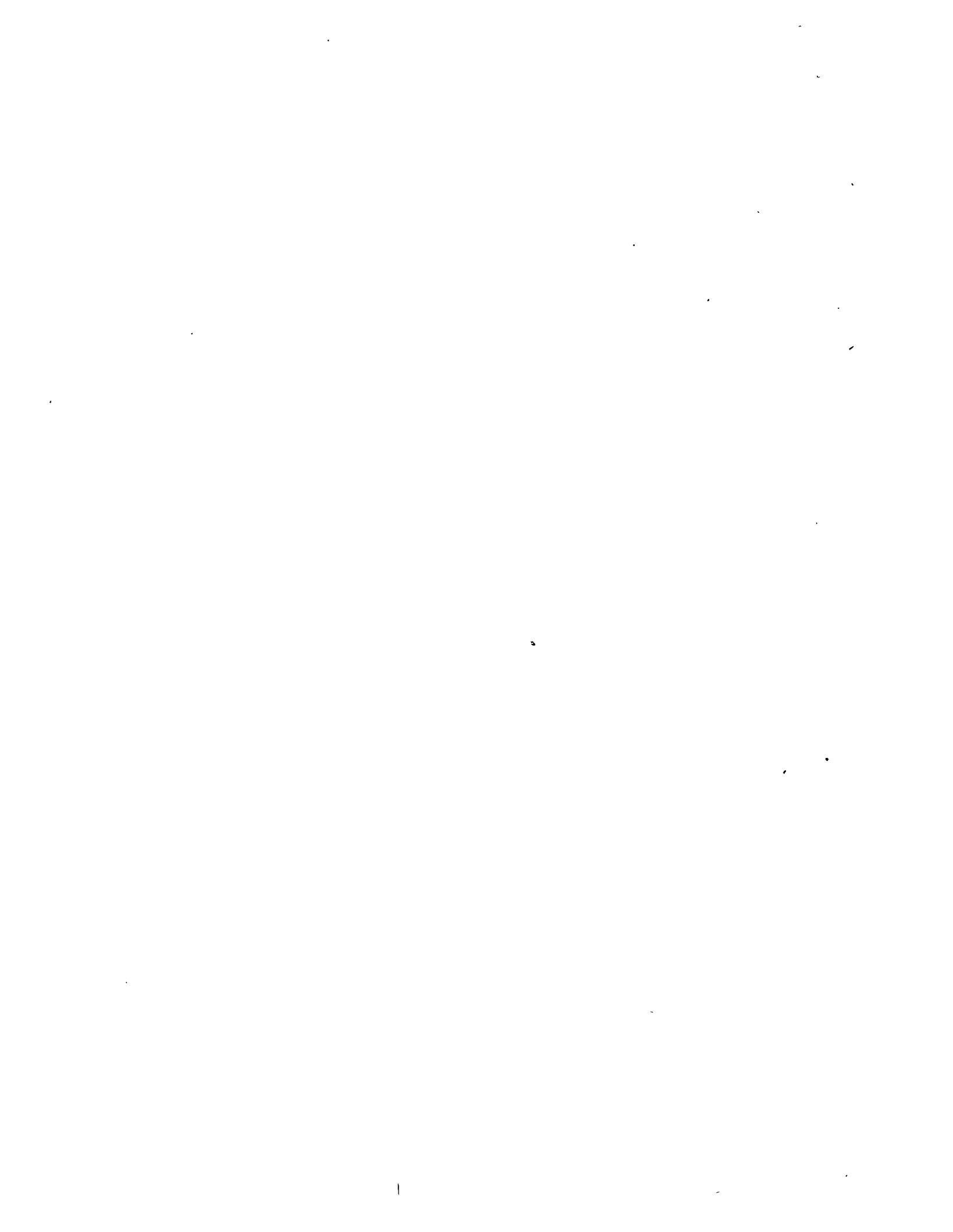
Yes 14  
No 27  
If no, why not?

10. Comments or suggestions.

Total responses - 42

CFOB COPY VOLUME AND COST  
PER MONTH BY FLOOR UNDER  
EXISTING AND ALTERNATE SIMULATIONS

<u>Floor</u>	<u>Existing</u>		<u>Alternate</u>	
	<u>Copies</u>	<u>Cost</u>	<u>Copies</u>	<u>Cost</u>
10	<u>40,822</u>	<u>\$2,694</u>	<u>22,934</u>	<u>\$1,288</u>
9	<u>58,553</u>	<u>3,421</u>	<u>35,163</u>	<u>2,080</u>
8	<u>27,616</u>	<u>1,831</u>	<u>14,239</u>	<u>1,148</u>
7	<u>17,961</u>	<u>1,055</u>	<u>11,855</u>	<u>1,217</u>
6	<u>62,761</u>	<u>3,228</u>	<u>154,674</u>	<u>3,751</u>
5	<u>6,180</u>	<u>439</u>	<u>4,496</u>	<u>331</u>
4	<u>16,987</u>	<u>885</u>	<u>13,687</u>	<u>692</u>
3	<u>5,632</u>	<u>372</u>	<u>4,020</u>	<u>354</u>
2	<u>13,018</u>	<u>1,247</u>	<u>8,328</u>	<u>834</u>
1	<u>8,867</u>	<u>754</u>	<u>6,509</u>	<u>568</u>
Basement	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
Sub-basement	<u>14,524</u>	<u>579</u>	<u>-0-</u>	<u>-0-</u>
Total	<u>272,921</u>	<u>\$16,505</u>	<u>275,905</u>	<u>\$12,263</u>



Copies of GAO reports are available to the general public at a cost of \$1.00 a copy. There is no charge for reports furnished to Members of Congress and congressional committee staff members. Officials of Federal, State, and local governments may receive up to 10 copies free of charge. Members of the press; college libraries, faculty members, and students; non-profit organizations; and representatives of foreign governments may receive up to 2 copies free of charge. Requests for larger quantities should be accompanied by payment.

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

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

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

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

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

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



**AN EQUAL OPPORTUNITY EMPLOYER**

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

---

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300

POSTAGE AND FEES PAID  
U. S. GENERAL ACCOUNTING OFFICE



**THIRD CLASS**