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BY THE COMPTROLLER GENERAL

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Report To The Congress

OF THE UNITED STATES

Federal Productivity Suffers Because Word Processing Is Not Well Managed

Word processing systems can increase Government office productivity--provided the people, equipment, and procedures are managed properly.

Most Federal departments and agencies, however, are not complying with regulations covering the management of these systems and, furthermore, cannot demonstrate that they have increased their productivity or that the systems are cost effective. Latest figures show that the Federal Government is acquiring, through purchase or lease, about \$80 million in word processing equipment a year, and this figure is expected to increase rapidly in the future.

The Administrator of General Services should provide guidance to agencies and conduct periodic reviews of their systems. He should also assess agencies' compliance with regulations concerning the management of word processing systems.



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COMPTROLLER GENERAL OF THE UNITED STATES

WASHINGTON, D.C. 20548

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

This report is one of a series of reviews recommending ways to improve the productivity of common Government functions. The report discusses the management and productivity of word processing in some of the largest Federal agencies. It also assesses the work being done by the General Services Administration's National Archives and Records Service in their central management role for word processing.

We are sending copies of the report to the Director, Office of Management and Budget, and to the Secretaries of Agriculture; Commerce; Health, Education, and Welfare; Justice; the Interior; Transportation; and the Treasury. Copies are also being sent to the Administrators of General Services, the Environmental Protection Agency, the National Aeronautics and Space Administration, the Nuclear Regulatory Commission, and Veterans Affairs; as well as to other Federal agencies we believe may have a special interest in this report.

A handwritten signature in cursive script, reading "Elmer A. Riecke".

Comptroller General
of the United States

D I G E S T

Technological advances in office machines and new approaches to the secretarial function--word processing systems--offer potential for a more efficient and economical output of written communication. If people, equipment, and procedures are used and managed properly, this new technology could result in a significant breakthrough in government office productivity.

The General Services Administration, through its National Archives and Records Service, is responsible for assisting Federal agencies in developing word processing systems but has not provided the leadership needed to establish a Government-wide program. As a result, each department and agency is individually going through the same learning process when acquiring equipment. The result is unchecked equipment proliferation and duplication of effort in preparing or contracting for word processing handbooks.

The Federal Government employs over 171,000 secretaries, stenographers, and typists at an annual salary outlay of over \$1.5 billion. Word processing can help reduce the size and accompanying cost of this work force.

Most departments and agencies included in GAO's review were not complying with regulations covering management of word processing equipment--costing about \$80 million in fiscal 1977 and expected to cost \$300 million by 1982. Furthermore, most agencies cannot demonstrate that their word processing systems have increased productivity, nor that their systems are cost effective. This is because the agencies did not conduct

--feasibility studies, including the gathering of baseline productivity data;

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- cost-benefit or cost-effectiveness studies of alternative equipment configurations;
- planning studies of the new system's effect on personnel; and
- post-installation reviews comparing new productivity statistics with the base-line data.

This lack of evaluation by most agencies caused many word processing systems to fail. For example, in one Internal Revenue Service regional counsel office, automatic typewriters at an annual rental cost of \$71,000 had been installed, one or two at a time, without cost-benefit studies. Five years after the installation of some equipment, none of the machines was found to be cost effective. Internal Revenue then reviewed its nationwide usage of these machines and found that some were used as little as 1-1/2 hours a day. Other machines were assigned to secretaries for use as regular typewriters. The agency is now replacing some automatic typewriters with machines that are better suited to their workload. (See p. 8)

GAO's review did identify some isolated examples of well-managed and productive word processing systems, such as one in the Social Security Administration's bureau of data processing. This system was installed in 1975 after extensive feasibility and cost effectiveness studies were completed. Productivity rose 45 percent after the first year of operation and is now over 69 percent higher than under the previous system of electric typewriters. (See p. 15.)

RECOMMENDATIONS

To improve agencies' management of word processing, the Administrator of General Services should upgrade and accelerate efforts to assist and monitor agencies' efforts by:

- Making available to agencies the standards, guidelines, and criteria necessary to develop, operate, and evaluate word processing systems.

- Analyzing agencies' practices to ascertain conditions where more efficient and cost-effective operations would result from word processing systems.
- Developing and making available to agencies evaluation criteria for word processing equipment lease-versus-buy decisions.
- Conducting periodic reviews of agencies' management of word processing systems.
- Acting as a clearinghouse for agencies developing and reviewing their word processing activities.

The Administrator also should expedite issuance of a word processing handbook to aid agencies in developing and operating word processing systems. The handbook should include sections on equipment and productivity standards and should be updated periodically, to reflect changes in technology, equipment configurations, or other activities in the field.

GAO further recommends that the Administrator review as expeditiously as possible agency guidelines for implementing and monitoring word processing systems. If the review identifies deficiencies in the guidelines or if no guidelines exist, then the General Services Administration should assist the agencies and closely monitor their progress in developing these guidelines.

GAO found that a key factor in the initial and continuing success of any word processing system is careful attention to personnel planning and management of the system. Therefore, GAO believes General Services should work with the Office of Personnel Management to assure that human relations aspects of word processing are not ignored.

*GAO
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MATTERS FOR CONSIDERATION
BY THE CONGRESS

We were informed that the General Services Administration is planning to begin a

Government-wide inspection of agencies' word processing systems in the spring of 1979. The Congress may wish to obtain the results of these inspections for its use during oversight and authorization hearings with the agencies.

AGENCY COMMENTS

GAO obtained comments on this report from the General Services Administration and they basically agreed with GAO's recommendations. Although formal comments were not obtained from the other Federal agencies mentioned in the report, GAO discussed the results with officials of those agencies. Their comments were considered in preparing the report.

C o n t e n t s

		<u>Page</u>
DIGEST		i
CHAPTER		
1	INTRODUCTION	1
	Background	2
2	PROBLEMS RECOGNIZED BUT NOT RESOLVED	4
	Leadership, guidelines, and standards needed	4
	Adverse effects	6
	Conclusions	11
	Recommendations to the Administrator of General Services	12
3	NEED FOR BETTER AGENCY MANAGEMENT OF WORD PROCESSING	13
	Agency responsibilities	13
	Agencies not in compliance with the FPMRs	14
	Some agencies were managing word processing activities effectively	15
	Need for better planning, implementation/utilization, and post-installation review	16
	Conclusions	21
	Recommendations to the Administrator of General Services	21
	Agency comments and our evaluation	21
	Matter for consideration by the Congress	22
4	SCOPE OF REVIEW	23
APPENDIX		
I	Word processing equipment categories	26
II	Word processing equipment expenditures	33
III	Status of agencies' word processing handbooks reviewed by GAO	35

		<u>Page</u>
IV	Agencies' compliance with the Federal Property Management Regulations as reviewed by GAO	36
V	January 24, 1979, letter from the Administrator of General Services and GSA comments on recommendations	37
VI	NARS Word Processing Bulletin	43

ABBREVIATIONS

EPA	Environmental Protection Agency
FPMR	Federal Property Management Regulation
GAO	General Accounting Office
GSA	General Services Administration
HEW	Health, Education, and Welfare
IRS	Internal Revenue Service
NARS	National Archives and Records Service
OE	Office of Education
OPM	Office of Personnel Management
SSA	Social Security Administration

CHAPTER 1

INTRODUCTION

During the past decade, industrial productivity has grown steadily. Office productivity has not kept pace with that growth. However, word processing--a technological advance in office machines and a systematic approach to office work flow--can increase the quality and amount of written communication produced. This new word processing technology could substantially increase Government office productivity, provided the equipment, procedures, and people are employed and managed properly.

Since 1972, the size of the secretarial force in the Government has decreased slightly, but secretaries still represent 11.5 percent of all civilian white collar employees. By increasing the productivity of this segment of the work force, word processing is a potentially powerful means of controlling Government personnel costs.

The General Services Administration (GSA), through its National Archives and Records Service (NARS), originally defined word processing as "the production of written communication using automated technology, trained people, and systems management procedures." Recently, NARS reworded that definition to "the manipulation of textual material through the use of a keyboarding device capable of controlled storage, retrieval, and automated typing."

NARS felt that it could not give sufficient direction to the management and operation of agency word processing systems. Therefore, word processing was redefined as a technology to be considered when seeking improvements in correspondence and other records management program elements.

We reviewed the word processing area because of its rapid growth and to see whether its productivity potential was being realized. Word processing, if applied properly, can facilitate increased productivity either by reducing an office's clerical staff or by allowing the office to handle a larger workload. ^{1/} On the other hand, many articles and studies indicate that if the system is poorly planned or if the office's workload is not suited for word processing, the result can be no improvement in productivity despite the acquisition of costly and sophisticated equipment.

^{1/}Our research uncovered examples in both the public and private sector where word processing has significantly increased office productivity.

Equipment used in word processing applications includes such machines as automatic and visual display text-editing typewriters and shared logic and timesharing terminals. Purchase prices for this equipment range from about \$5,000 for simple automatic typewriters to over \$200,000 for shared logic systems. The Department of the Army now categorizes word processing equipment into the following six classes. (Interface devices are grouped separately.)

- Electronic typewriters.
- Blind keyboard word processors.
- Thin-window word processors.
- Visual display text editors.
- Shared logic or minicomputer text editors.
- Timesharing word processing.

(See app. I for a detailed description of the above equipment.)

Our review concentrated on the equipment in the first four categories since the majority of agencies we visited had these systems in operation. However, as the cost of minicomputers and timesharing decreases, Government use of equipment in the last two categories will certainly increase.

BACKGROUND

The word processing field has grown tremendously since its inception a little over a decade and a half ago and is expected to accelerate in the near future. In 1964, one manufacturer had cornered the market of word processing equipment; now over 70 companies comprise the industry. Estimates indicate that by 1980 word processing should become a multi-billion dollar industry.

The Federal Government, the largest single employer in the United States, employs over 171,000 secretaries, stenographers, and typists. The annual salary outlay for these employees is over \$1.5 billion. This secretarial force represents close to 11.5 percent of the total civilian white collar work force. Even slight increases in secretarial productivity would significantly lower the cost of this segment of the work force, thus making it particularly open to the application of word processing systems.

Since 1969, Federal departments and agencies have purchased about \$50 million of word processing equipment and have annually leased over \$67 million of such equipment. We

were unable to obtain the value of timesharing systems in use by the Federal Government, but we believe it runs into additional millions of dollars each year. Expenditures by the Federal Government for word processing equipment from 1969 through 1977 are detailed in appendix II. If the Federal sector maintains the growth rate of the last 9 years, annual expenditures will exceed \$300 million by 1982.

The early days of word processing were characterized by a lack of flexibility in approaches. When work measurement studies were first applied to the traditional office, it was found that a secretary's work could be categorized into two activities:

- Word processing or correspondence function which dealt with typing, transcription, and editing.
- Administrative support function which dealt with filing, telephone answering, and mail handling.

As a result of this study, many traditional private secretarial positions were eliminated, and in their place, centralized word processing centers were set up and administrative support functions were created. This new concept would allow expensive equipment to be used constantly by pooling clerical resources, and would result in improved efficiency and maximized cost savings.

For a time, centralization was the only option considered in using word processing. However, these views have changed, and today many options are open to word processing users. For example, word processing can be done by an operator working alone, or in small groups or by providing traditional secretaries with word processing machines.

Decentralized concepts are now being promoted and are attractive because they present fewer problems in office reorganization. Advantages claimed for decentralization include the following:

- Users have better communication with clerical support.
- Operators have greater responsibilities.
- Operators can be recognized more readily for their achievement.

However, while decentralization offers a number of advantages, it is not as efficient as centralization, and it presents a smaller potential cost-benefit ratio.

CHAPTER 2

PROBLEMS RECOGNIZED BUT NOT RESOLVED

The National Archives and Records Service is responsible for providing Government-wide leadership in word processing. NARS established a word processing program in 1975 to assist departments and agencies in managing their applications, but the program has been ineffective. Regulations have been issued but are not being followed. Standards, guidelines, and criteria are not yet published. These problems have contributed to unchecked equipment proliferation and duplication of effort throughout the Government.

LEADERSHIP, GUIDELINES, AND STANDARDS NEEDED

The Federal Records Act of 1950 assigns the General Services Administration responsibility for Government-wide economical and efficient records management. As part of this responsibility, GSA is to promote "the economical and efficient use of equipment used to create records," or, word processing. As early as 1974, GSA sent a letter to all Government agencies pointing out that word processing could improve productivity and that it could potentially reduce the Federal Government's tremendous paperwork cost. However, GSA was concerned that each agency had to individually go through the same learning process for (1) determining system configuration, (2) ascertaining the appropriate equipment, (3) justifying the equipment, (4) developing operating systems and procedures, and (5) resolving personnel problems associated with changes in operational methods. GSA was also concerned that the dramatic increases in efficiency being claimed by vendors might not materialize because systems and procedures for obtaining the increases had not been properly developed or because behavioral problems were not anticipated. GSA believed that a single objective, Government-wide evaluation of equipment capability, coupled with a systems approach for using the equipment, was needed.

To address these problems, NARS agreed to take the lead in providing technical assistance to executive departments, assisting them in the efficient and effective application of the word processing concept. As part of this effort, NARS was to publish guidance to follow in conducting word processing studies and in determining the appropriate equipment and system configuration. This guidance was expected to assist the agencies in avoiding difficulties associated with changes and in achieving dollar savings.

In January 1975, NARS established a Government-wide word processing program to assist agencies in developing, implementing, and controlling their own word processing systems through NARS consulting services, guidelines, standards, and regulations.

In June 1975, GSA published Federal Property Management Regulations (FPMRs) which set forth the policies and procedures for developing word processing in the Federal Government. In these Regulations, NARS was officially assigned the responsibility of assisting Federal agencies in establishing word processing systems. To fulfill the responsibility, NARS was to provide the agencies with:

- Criteria, information, and forms for conducting feasibility and implementation studies.
- Standards and guidelines necessary to evaluate the productivity of word processing activities.
- Cost estimating criteria for comparing existing applications with alternative approaches.
- Information concerning equipment selection tailored to specific agency needs.
- Current information on the concept and various applications of word processing.

However, this guidance has not been provided to the agencies. The NARS handbook, which was to set forth standards and guidelines, has not yet been published.

NARS now plans to issue three technical handbooks, each covering a phase of the word processing acquisition cycle. Volume I is to address feasibility studies, volume II will discuss the installation and implementation phase, and volume III will deal with post-installation reviews and should contain productivity measurement data now being developed by consultants under contract. Volume I of the handbook is to be sent to the printer by June 1979.

According to NARS officials, developing standards and procedures to evaluate the productivity of word processing installations has proved to be very difficult. They also stated that economic factors, such as alternative costs and the length of time to keep equipment, are also difficult to determine, and NARS has not progressed as far as it would have liked.

ADVERSE EFFECTS

As was the case in 1974 when GSA first worried that no Government-wide approach to word processing system structure and management existed, each department and agency is still going through the same learning process in implementing and managing word processing. Although we believe that office productivity is lost because of the absence of productivity standards, cost estimating criteria, and guidelines, we were unable to measure the extent of that loss. We did find, however, that these problems contributed to unchecked equipment proliferation, which, when discovered, resulted in moratoriums being placed on equipment acquisitions. Another result was duplication of effort as evidenced by various departments and agencies preparing or contracting for handbooks.

Unchecked equipment proliferation and resulting moratoriums

Some departments and agencies had unchecked equipment proliferation and others were unaware of what equipment they had. In addition, some of the agencies had to place moratoriums on the purchase and/or lease of word processing equipment. Examples of these situations follow.

Office of Education (OE)

In November 1976, the Department of Health, Education, and Welfare (HEW), received lease renewal requests totaling over \$500,000 from OE for numerous automatic typewriters. The Department judged that this situation suggested the proliferation of costly equipment without substantive justification. Renewals were to be approved subject to OE agreeing to conduct an indepth review of its needs and furnishing justification for each item within 6 months.

It was not until some 8 months later, in July 1977, that OE requested its bureaus to make a review of their automatic typewriters to identify those which were obviously idle or greatly underutilized.

Thus, OE found itself facing the problem of justifying machine usage, since it was felt that cost effective decisions were not being made within the organization. Its outside constraint was HEW's refusal to approve lease renewals until each machine was justified.

In July 1977 OE began a two-phase study of its automatic typewriters. Phase I was a cursory review to identify glaringly misused machines so they could be immediately returned or changed. Phase II was to be a quantitative, indepth study of equipment identified as questionable in Phase I.

The Phase I study revealed that

- the use of word processing equipment in OE had proliferated;
- OE was not in compliance with NARS Regulations; and
- in most cases, a utilization analysis had been neglected.

More specifically, the study concluded that the lease of 113 automatic typewriters, at an annual cost of about \$230,000, appeared questionable. Some machines needed downgrading, some upgrading, and some were not needed at all. A more indepth study of these machines was requested. The study also concluded that the lease of 111 automatic typewriters, at an annual cost of about \$340,000, appeared justified.

At the end of our audit, the Phase II study was still in process. Sixty of the 113 typewriters were to be returned to the lessors by the end of fiscal 1978; 11 others were to be downgraded. None had been upgraded.

Environmental Protection Agency (EPA)

In April 1976, EPA headquarters performed a study of word processing activities because of problems stemming from a lack of coherent word processing policy in the agency. The study concluded that the responsibility for approving close to \$2.5 million of word processing equipment was fragmented and that little consideration was given to the management implications of equipment purchases and leases. Procedures for assessing office workload needs and routinely monitoring and reevaluating office requirements were said to be nonexistent. Consequently, equipment was being misused. Identified in the study were such problems as unwarranted and rising expenditures and generally poor management of word processing.

The study also concluded that many EPA managers looked to the word processing technology as a means of solving office

inefficiency. However, EPA's extensive inventory of sophisticated word processing equipment had not solved office workload problems because managers were not aware of the nature and volume of office work and evolving changes in office needs.

The EPA study also addressed the use of timesharing services for word processing. Because these services were felt to be misused in certain areas, the study concluded that procedures for monitoring such usage were needed.

EPA hired a word processing expert to correct these problems. According to an agency official, EPA expects to save about \$200,000 in rental costs and an additional \$250,000 to \$300,000 in timesharing costs as a result of the word processing expert's work to date. Thusfar, this effort has been confined to headquarters; the regions are just now being studied. Our work disclosed the same condition in the regions, and we believe that opportunities exist for substantial savings in their equipment costs as well.

Internal Revenue Service (IRS)

In early 1975, 1/ the IRS headquarters staff undertook their own study of agency word processing equipment. IRS officials realized equipment was being acquired in significant quantities and scattered throughout the agency. The study group found that, in general, automatic typewriters were not being used effectively and users were not willing to change their office structure to use the equipment more efficiently.

Because of this unwillingness, in May 1975 IRS placed a moratorium on the acquisition of all word processing equipment and enacted a procedure to follow when making future requests. The following points were stressed.

- Equipment selected for use has often been far more sophisticated, and consequently more expensive, than is necessary.
- Circumstances are limited where such equipment can be used effectively.
- Cost-benefit analyses should be completed and equipment fully justified before being acquired.

1/NARS had not released their first FPMR to agencies to help guide them in developing and operating word processing systems until June 1975.

IRS officials claim that about \$750,000 of acquisitions were stopped by the moratorium. Also during the moratorium, some equipment was disposed of and other equipment was moved. In September 1977, guidelines for the design, implementation, and evaluation of word processing systems in IRS were formalized.

Department of Commerce

In February 1975, 1/ the Department of Commerce imposed a moratorium on the acquisition of any additional automatic typewriters pending the results of a departmental study. The moratorium was imposed because the number of such typewriters in the Department had increased rapidly, while the number of secretarial positions had not been reduced in proportion to the increased operating costs.

Shortly thereafter, the departmental study found that (1) close to \$900,000 a year was spent for rentals, (2) none of Commerce's bureaus had established a systematic approach to using automatic typewriters, and (3) none of the bureaus had reduced staffing from using these machines. The study task force stated that the pressure for more machines was unrelenting while fundamental changes in job structuring and organization of clerical operations were not accomplished. These changes were believed necessary to make the machines cost effective.

Three months later the departmental moratorium was lifted on a selective basis and subject to cost and usage effectiveness requirements and criteria. Requisitions for the lease or purchase of automatic typewriters must now be accompanied by a feasibility study justifying the acquisition on the basis of one of the following two criteria.

1. Cost effectiveness. Use of the machine must produce actual dollar savings which exceed the cost of the machine by reducing overtime or by eliminating one or more positions.
2. Usage effectiveness. Applicable only in those few cases where an automatic typewriter can be used effectively yet clear financial savings cannot be demonstrated. To be justified under this criterion, the feasibility study must show that:

1/ NARS had not released their first FPMR to agencies to help guide them in developing and operating word processing systems until June 1975.

--The machine will be used at least 6 hours a day on suitable material.

--Arrangements will be made to make the machine available for other offices when it is not required. However, the machine is not to be used as a standard typewriter.

At the time of our field work, the Department of Commerce had not formalized its guidance and still relied on the above interim procedures.

General Services Administration

In August 1976, after analyzing inventory submissions, GSA imposed a moratorium on all of its own outstanding orders for word processing equipment. The analysis showed that

--lease charges exceeded \$620,000 per year,

--the cost of owned equipment was \$575,000, and

--68 percent of the equipment had been acquired during the past 3 years.

Outstanding orders were to be held in abeyance pending completion of a thorough review. The review was to clearly establish a continuing need for each piece of equipment. Each office had 60 days to inform the director of administration of the results of their reviews, including major actions taken, those in process, and those planned.

A set of interim procedures was also issued at that time. The procedures provided that prior to any acquisition, a study would be made that would clearly and factually demonstrate that significant savings and other benefits would result from installing such equipment. GSA has recently published formal internal regulations.

Duplication of effort

NARS agreed to issue a Government-wide word processing handbook in mid-1975, but as yet, the handbook has not been issued. We found that a number of departments and agencies undertook the task of preparing their own handbooks, because they could no longer wait for NARS, and as a result, a great deal of effort has been duplicated.

In mid-1975, the Army issued its handbook on word processing. A year earlier, the Army issued regulations addressing procedures, feasibility studies, cost effectiveness

analyses, lease-versus-buy analysis, and various equipment capabilities relating to word processing systems. These publications have provided some guidance in the Government. Today, the Army publications are even used by NARS in its workshops and regional offices.

However, not all agencies used the Army regulations for guidance. For example, GSA, after waiting for NARS' handbook, has just published its own handbook. The Department of Housing and Urban Development has recently contracted with a consultant for a minimum of \$30,000 to establish a word processing training course for its management analysts. The course is to include material on feasibility studies, equipment trade-offs, and awareness of personnel considerations. The Department of Transportation has also contracted for a word processing handbook. Appendix III contains a list of agencies that have developed their own word processing handbooks.

Recent NARS assistance

At the beginning of our audit, NARS developed a training course entitled "Word Processing Fundamentals," which was intended for management analysts, word processing supervisors, and administrative managers. This 3-day course covered word processing feasibility studies, alternatives to word processing equipment categories, and agency responsibilities for managing a word processing program. At the end of fiscal 1978, the course had been given to 544 agency personnel in Washington, D. C., regional headquarters, and on site at several Federal agencies. At the time of our audit, it was too early to evaluate the impact of this training course.

CONCLUSIONS

NARS has not provided the leadership needed to establish a Government-wide word processing program. As a result, some agencies have developed their own handbooks, standards, procedures, and criteria. Other agencies have not taken such initiative and lack the technical expertise to do so. This lack of leadership on the part of NARS has reduced the agencies' potential to improve their productivity through the use of word processing and has contributed to unchecked equipment proliferation and duplication of effort.

Word processing technology, like many new areas in the Federal Government, is advancing at different rates within the agencies throughout the Government. Many of these agencies have collected information and developed procedures. Such reference material, work experience, and lessons learned by the agencies could and should be made available for the

benefit of all agencies through the Government's central, responsible agency--GSA.

RECOMMENDATIONS TO THE ADMINISTRATOR
OF GENERAL SERVICES

To improve all agencies' management of word processing, the Administrator should upgrade and accelerate efforts to assist and monitor agencies' efforts by:

- Making available to agencies the standards, guidelines, and criteria necessary to develop, operate, and evaluate word processing systems.
- Analyzing agencies' practices to ascertain conditions where more efficient and cost effective operations would result from word processing systems.
- Developing and making available to agencies evaluation criteria for word processing equipment lease-versus-buy decisions.
- Conducting periodic reviews of agencies' management of word processing systems.
- Acting as a clearinghouse for agencies developing and reviewing their word processing activities.

We also recommend that the Administrator expedite the issuance of a word processing handbook to aid agencies in developing and operating word processing systems. The handbook should include sections on equipment and productivity standards and should be updated periodically to reflect changes in technology, equipment configurations, and other activities in the field.

CHAPTER 3

NEED FOR BETTER AGENCY MANAGEMENT

OF WORD PROCESSING

Federal agencies are acquiring about \$80 million of word processing equipment a year, mostly by leasing, and this figure is expected to increase rapidly in the future. Most departments and agencies we reviewed are not in compliance with regulations covering the management of word processing systems. Furthermore, most agencies can neither demonstrate that they have increased their productivity nor that their word processing systems are, in fact, cost effective. This situation has occurred because the agencies did not conduct (1) feasibility studies, including the gathering of baseline productivity data, (2) cost-benefit or cost-effectiveness studies of alternative equipment and equipment configurations, (3) planning studies of the new system's impact on personnel, and (4) post-installation reviews comparing new productivity statistics with the baseline data. Most agencies that have analyzed their systems have discovered that they were not cost effective.

AGENCY RESPONSIBILITIES

The 1975 Federal Property Management Regulation required agencies to

- establish procedures for submitting and approving all proposed word processing installations and for reviewing existing systems;
- review each existing or proposed application for equipment to (1) determine cost effectiveness, (2) ascertain the feasibility of standardizing equipment, and (3) develop comparative cost analyses; and
- develop and maintain an inventory of word processing equipment, including such information as the manufacturer's name, model number, and purchase price or accumulated rental costs.

In August 1977, the FPMR was expanded, and agencies were required to (1) establish and issue procedures for evaluating the productivity of word processing applications and (2) periodically audit the applications. The 1975 FPMR, as well as the revised version, assigned the above tasks to a specific office or agency official.

AGENCIES NOT IN COMPLIANCE
WITH THE FPMRs

All the departments and agencies we reviewed had substantial amounts of word processing equipment. Every regional office and field activity we visited also had acquired some word processing equipment ranging from a single machine to large word processing centers. However, most of the departments and agencies are not complying with the requirements of the FPMRs.

Approval procedures not established
and those established not adhered to

Many departments and agencies have not established procedures for submitting and approving proposed installations plus reviewing existing systems, although some have them in draft form. For example, the Department of Commerce has not issued a departmental directive because it is waiting for the National Archives and Records Service to issue its guidance on word processing. Also, the National Bureau of Standards within Commerce has not issued procedures because it is waiting for Commerce to issue a departmental directive.

In some cases, agencies have established approval procedures but are not following them. For example, the Department of Health, Education, and Welfare has procedures for centralized approval at the Department level, but headquarters and regional offices have acquired equipment without receiving that approval.

Department of the Navy instructions required headquarters approval before leasing or purchasing word processing equipment. However, at the naval activity we visited, many machines were leased without headquarters approval.

Cost effectiveness and
cost analyses not done

Most of the departments and agencies we visited either had not reviewed their word processing applications to determine whether they were cost effective or had not developed comparative cost analyses. Those that had, generally found that many of their machines were not cost effective. Examples of ineffective applications were discussed in chapter 2--at the Office of Education, the Environmental Protection Agency, and the Internal Revenue Service.

Inventories not being maintained

Many agencies do not maintain accurate up-to-date inventories of word processing equipment. As a result, headquarters officials were often unaware of what equipment they had, much less what was located at regional offices and field activities. Several inventories were made in response to our inquiries, but they were not being maintained on a regular basis.

Productivity evaluation procedures not established and audits not performed

Most of the departments and agencies we visited had not established procedures for evaluating the productivity of their word processing applications. Consequently, agency officials did not know the productivity of their machines. Failure to keep production statistics and the absence of baseline data make it difficult to readily evaluate operator and machine productivity. At some locations, productivity statistics were gathered but not used. The great majority of activities reviewed had not performed audits of their word processing installations.

SOME AGENCIES WERE MANAGING WORD PROCESSING ACTIVITIES EFFECTIVELY

In contrast to most agencies we reviewed, the Social Security Administration (SSA) and the Department of the Army displayed sound procedures for controlling equipment acquisition and use. Both agencies have developed regulations and manuals that implement the provisions of the FPMRs. They also have procedures which call for a service test of 6 months before making a final decision on keeping the equipment. The Army's procedures also include productivity standards for new equipment justification.

SSA's bureau of data processing went through a careful planning and testing procedure prior to acquiring its word processing equipment. Faced with a sizable backlog of typing, overtime, and loss of typists through normal turnover during a hiring freeze, the Bureau looked to word processing to solve its problem. It tested three manufacturers' equipment side by side for 3 months. Productivity, machine reliability, accuracy, training techniques, and operators' attitudes were all reviewed prior to final selection. A cost-benefit analysis was prepared for the equipment that was selected. In addition, baseline data was gathered for purposes of making a post-implementation study. A lease-versus-buy analysis was made which resulted in the purchase of the machines selected.

Bureau of data processing statistics through the end of the first year of word processing use showed that typing productivity had increased by 45 percent with word processing. At the end of the second year, the overall productivity of the system was up over 69 percent. While we recognize that testing equipment to this extent is unusual, in our opinion the attention given the decision and the methodology followed were good.

The Army word processing program, under the Adjutant General, has resulted in the establishment of many successful word processing centers. We collected information on one of those centers now located in the Office of the Surgeon General of the Army. This center provides transcription and editorial support for 150 authors in the Army Medical Department Personnel Support Agency. The system was installed in 1973 with seven operators and an equal number of stand-alone word processors. In April 1978 a shared logic system was installed replacing this equipment. (See app. I for a description of a shared logic system.)

During the center's 5-year life, its staffing has remained constant, while recently the productivity of the system has increased significantly. Available productivity data for the period 1976-78 shows that line output had risen 148 percent with the stand-alone system. Also in the first 5 months of operation of the new system, productivity has risen 238 percent over the base period. Management at the center attributes these gains in productivity to

- the Agency's commitment to word processing;
- competent word processing supervision;
- the new shared logic equipment and its features of a continuous paper feeder and offline printer; and
- a good training program on the new equipment.

NEED FOR BETTER PLANNING,
IMPLEMENTATION/UTILIZATION,
AND POST-INSTALLATION REVIEW

Good management principles and procedures dictate that appropriate studies be made and documentation be presented to management to enable them to make knowledgeable decisions during the planning phase. A major part of the planning process is the feasibility study which has three prime components --the workload survey, cost-benefit analysis, and lease-versus-buy analysis.

The survey portion is designed to identify the extent and type of clerical duties done within an agency; e.g., typing, filing, and answering telephones. Workload statistics should also be developed into baseline productivity data for future measurement of productivity.

The cost-benefit analysis is based on the premise that the cost of equipment and site preparation for word processing can be offset by the increased productivity of the new system. All things being equal, secretarial/clerical costs should decrease, justifying the time and money invested in the change to word processing. If this does not happen, there must be other benefits that warrant the increased costs. 1/

The lease-versus-buy analysis, as the name implies, provides data on the alternatives of purchasing or leasing word processing equipment.

Many regional offices and field activities were generally ignoring the planning steps outlined above. Offices were acquiring word processing equipment without making feasibility studies and without properly determining their equipment and personnel requirements. Workload surveys have not been made and baseline data has not been gathered. Consequently, cost-benefit analyses have not been prepared.

For example, regional offices of Department of the Interior's National Park Service and the Department of Agriculture's Food and Nutrition Service acquired their word processing machines without making feasibility studies. EPA and the Nuclear Regulatory Commission regional offices acquired a number of machines with little justification or supporting data. A Navy field activity acquired many machines without the benefit of feasibility studies, again with very brief and questionable justifications.

We also found that many activities visited have not made lease-versus-buy analyses, either when the equipment was acquired or periodically when the leases were renewed. This has resulted in equipment being leased for excessive periods without proper management review. Although many word processing officials expressed the opinion that leasing was wise because of the rapid technological development taking place in the industry, we observed that some equipment was kept for periods long enough to justify purchasing.

1/GSA has recently indicated that the use of word processing equipment will be cost effective only if used for material with a high ratio of repetitive to original typing.

For example, at OE headquarters a word processing machine had been leased over a number of years at a total cost of \$17,000. The original purchase price of the machine was \$5,400. The Drug Enforcement Administration, in 1976, undertook a study to develop specific guidelines that its managers could use to determine if equipment should be acquired through purchase or lease. The study concluded that purchasing, rather than leasing, some 100 machines could result in an out-of-pocket savings of \$990,000 over the 8-year life of the equipment. Actions were taken to purchase the machines.

In general, if the Government purchases word processing equipment rather than leases it, the potential savings could be significant. (See app. II.)

Need for better implementation/utilization

As shown, the potential of word processing to increase the productivity of the clerical workforce is great, but the cost could be substantial. Therefore, in establishing the system and selecting equipment, careful management consideration must be given, especially in the area of personnel planning. Consideration should be given to obtaining maximum utilization of the equipment while maintaining an office environment which recognizes the physical and mental needs of the office work force. This is especially true when a word processing center is established in an office which had been operating under a traditional secretarial mode.

Most departments and agencies we reviewed have not made extensive use of word processing centers. Rather, they have chosen to decentralize their equipment operations. Generally, the secretarial work force is apprehensive that the word processing concept, particularly in centers, is a return to the old typing pool environment and its associated dehumanizing effects. In personnel planning for the new system, agencies have recognized the following key items as necessary for a successful word processing system:

- Top management commitment to the concept.
- Good first-line supervision.
- Operator and user job satisfaction, including adequate training.
- Employee understanding of effects on job security, promotion, and compensation status.
- Environmental factors such as lighting, cooling, and acoustics.

The Army's word processing handbook points out that the personnel side of word processing--people and procedures--accounts for about 85 percent of a system's success or failure, with people as the most important factor. The more successful centers we examined seemed to have considered the above key factors, while those with difficulties or those that failed had not paid full attention to them. For example, an early National Aeronautics and Space Administration word processing center failed completely, and we were told the primary reasons were (1) a lack of top management support for the center, (2) poor first-line supervision, and (3) the users never being "sold" on the idea or trained adequately on their dictation equipment. In another case, a National Bureau of Standards center lost four of its six operators in a 6-month period because they were dissatisfied with the center's performance. Difficulties with the center were attributed to poor personnel planning, including failures to meet the conditions promised to operators.

Contracting out or doing an in-house feasibility study does not always insure the system's success either. The Federal Aviation Administration's central regional office has had four feasibility studies performed--two before leasing new word processing center equipment and two after. The first two studies were done by the vendor. The third study was done internally and the fourth by NARS.

Although each of the studies predicted savings in staff, the central region had hired four new people and transferred two employees into the center to operate the system at the time of our review. Furthermore, several machines sat idle for up to 6 months until the new people came into the agency.

We were told that NARS was asked to do the fourth feasibility study because

- regional office management did not believe in vendors performing feasibility studies and recommending their own equipment;
- the internal study was not acceptable because of opposition by division directors who would lose machines and operators; and
- the NARS study would add credibility to actions already taken and encourage the divisions to cooperate.

Once acquired, many offices have not utilized word processing equipment to its full potential. Without high utilization of the equipment, the potential for productivity

improvement is significantly reduced. For example, at an IRS regional counsel's office, automatic typewriters were acquired for secretaries who supported attorneys, but the machines were merely considered replacements for existing electric typewriters. A later study determined that the machines were not cost effective.

At an EPA regional office, a special task group study made in 1975 concluded that many of the word processing machines were not being utilized effectively, and suggestions were made to reorganize to improve utilization. A more recent study in December 1977 also found that equipment was not being used properly. Suggested changes were being implemented by the regional office at the time of our visit.

Need for post-installation reviews

Once a system has been operational for a period sufficient to establish a recognizable pattern, good management techniques dictate that a review be made to determine how the system is working in light of benefits anticipated in the planning phase. In such a post-installation review, the cost effectiveness of the system should be determined. All else being equal, the review should determine if increased productivity of typing is sufficient to offset the increased cost of the system. If it is not, then management should consider making changes necessary to make the system cost effective or relocate or return the equipment. Periodic audits including the measurement of system productivity should then follow to determine if further changes do occur.

Most agencies have not conducted post-installation reviews of their word processing systems, and consequently, management does not know if the systems are cost effective. A few agencies have conducted such reviews, usually as a special one-time effort, and found much of the equipment not to be cost effective. As mentioned in chapter 2, OE performed a post-installation review of its machines and found that half of them were of questionable cost effectiveness. Based on these findings, 60 leased machines are to be returned.

In another example, IRS reviewed one of its regional counsel offices and found that machines with an annual rental cost of \$71,000 had been installed, one or two at a time, without cost-benefit studies. Five years after the installation of some equipment, none of the machines was determined to be cost effective. The agency then undertook a nationwide review and found that some automatic typewriters were used as little as 1-1/2 hours a day. IRS is now replacing the

regional counsel machines with fewer machines which they believe are better suited to their needs.

CONCLUSIONS

Most of the departments and agencies were not in compliance with the FPMRs covering the management of word processing systems. Furthermore, most agencies could neither demonstrate that they have increased their productivity nor that their word processing systems are, in fact, cost effective. Prior to acquiring such systems, agencies have not conducted feasibility studies, cost-benefit studies, or completed adequate personnel planning. For the most part, neither have they done post-installation reviews comparing new productivity statistics with baseline productivity data. A few agencies have conducted such reviews and generally found much of the equipment not to be cost effective.

RECOMMENDATIONS TO THE ADMINISTRATOR OF GENERAL SERVICES

We recommend that the Administrator review as expeditiously as possible agency guidelines for implementing and monitoring word processing systems. If GSA identifies deficiencies in an agency's guidelines or if no guidelines exist, GSA should assist the agency and closely monitor its progress in developing these guidelines.

We believe that a key factor in both the initial and continuing success of any word processing system is careful attention to personnel planning and management of the system. Because of this, we recommend that General Services work with the Office of Personnel Management (OPM) to assure that human relations aspects of word processing are not ignored.

AGENCY COMMENTS AND OUR EVALUATION

GSA agreed with all of our recommendations to the Administrator. (See app. V.) In commenting on this report, GSA stated it would be unable to publish a complete word processing handbook during the present fiscal year and the effort will extend into fiscal 1980. Our report supports the urgent need for a complete document for proper guidance to the agencies. Therefore, we believe that the GSA should make every possible effort to develop and release a complete handbook during fiscal 1979.

GSA agreed that personnel planning and management are vital to word processing systems and that the Office of Personnel Management should address those concerns. However,

GSA believes that it is not in a position to give assurances that OPM will provide the needed attention to the human relations aspect of word processing. GSA feels that our recommendation should be addressed to OPM. However, GSA would be pleased to work with OPM in the effort. Our recommendation requests GSA only to solicit and work with OPM to point out to agencies any potential human relations pitfalls in developing and operating word processing systems. We believe this could be accomplished through a joint research and study effort by the two agencies.

MATTER FOR CONSIDERATION
BY THE CONGRESS

We were informed that GSA is planning to begin a Government-wide inspection of agencies' word processing systems in the spring of 1979. The Congress may wish to obtain the results of these inspections for its use during oversight and authorization hearings with the agencies.

CHAPTER 4

SCOPE OF REVIEW

Our review was directed at evaluating the management of word processing systems in the 10 executive departments with the greatest number of employees and/or clerical workers. We selected those 10 to obtain a broad cross-section of Government practices and also because we believed they had the greatest potential for increasing productivity. We also reviewed certain other executive branch agencies. While our selection is not necessarily statistically valid, we believe and were told by numerous officials that it is representative of the entire Federal sector.

We interviewed officials and examined records at numerous department and agency headquarters, regional offices, and field activities. We also met with word processing officials in the private sector.

Our initial objective was to ascertain how much of a productivity increase was realized by agencies changing to word processing. However, we were unable to accomplish this objective because the agencies lacked firm criteria, productivity data, and/or baseline data. Therefore, in doing some assessments we relied on analyses done by or for the activities after reviewing the analyses for reasonableness.

The following is a listing of the department and agency locations we visited.

<u>Department/agency</u>	<u>Location</u>
Department of Agriculture	Headquarters, Washington, D.C.
Food and Nutrition Service	Headquarters, Washington, D.C. Mid-Atlantic Region, Robbinsville, New Jersey
Department of Commerce	Headquarters, Washington, D.C.
National Bureau of Standards	Washington, D.C.

<u>Department/agency</u>	<u>Location</u>
Department of Defense	
Army	Headquarters, Washington, D.C. Office of the Surgeon General of the Army, Washington, D.C. Logistics Evaluation Agency, New Cumberland, Pennsylvania
Navy	Headquarters, Washington, D.C. Naval Air Development Center, Warminster, Pennsylvania
Air Force	Headquarters, Washington, D.C.
Department of Health, Education, and Welfare	Headquarters, Washington, D.C.
Social Security Administration	Headquarters, Baltimore, Maryland
Office of Education	Headquarters, Washington, D.C. Region III, Philadelphia, Pennsylvania Region VII, Kansas City, Missouri
Department of Housing and Urban Development	Headquarters, Washington, D.C. Region III, Philadelphia, Pennsylvania Region VII, Kansas City, Missouri
Department of the Interior	Headquarters, Washington, D.C.
National Park Service	Headquarters, Washington, D.C. Mid-Atlantic Regional Office, Philadelphia, Pennsylvania
Department of Justice	Headquarters, Washington, D.C.
Drug Enforcement Administration	Headquarters, Washington, D.C. Region 3, Philadelphia, Pennsylvania Region 10, Kansas City, Missouri

<u>Department/agency</u>	<u>Location</u>
Department of Transportation	Headquarters, Washington, D.C.
Federal Aviation Administration	Headquarters, Washington, D.C. Aeronautical Center, Oklahoma City, Oklahoma Central Region, Kansas City, Missouri National Aviation Facilities Experimental Center, Atlantic City, New Jersey
Department of the Treasury	Headquarters, Washington, D.C.
Internal Revenue Service	Headquarters, Washington, D.C. Mid-Atlantic Regional Office Philadelphia, Pennsylvania
Civil Service Commission	Headquarters, Washington, D.C.
Environmental Protection Agency	Headquarters, Washington, D.C. Region III, Philadelphia, Pennsylvania Region VII, Kansas City, Missouri
General Services Administration	Headquarters, Washington, D.C.
Federal Supply Service	Headquarters, Washington, D.C. Region 6, Kansas City, Missouri
National Archives and Records Service	Headquarters, Washington, D.C. Region 6, Kansas City, Missouri
National Aeronautics and Space Administration	Headquarters, Washington, D.C.
Nuclear Regulatory Commission	Headquarters, Washington, D.C. Region I, King of Prussia, Pennsylvania
Veterans Administration	Headquarters, Washington, D.C. Washington Regional Office Washington, D.C.

WORD PROCESSING EQUIPMENT CATEGORIES 1/Category I

Electronic typewriter. A one-piece typewriter; has an internal memory only. Also known as a "smart" typewriter.

Category II

Blind word processor. Has an integral keyboard, an internal memory, and a magnetic media recording capability.

Category III

A thin-window word processor. Has an electronic keyboard, an internal memory, a magnetic media recording capability, and a visual display of up to two lines.

Category IV

A display (visual) text editor. An electronic keyboard, usually with a separate printer, an internal memory, magnetic recording capability, and a visual display or screen.

Category V

A shared logic or minicomputer text editor. Has a central processor or controller that can link multiple typing stations to a large variety of entry and output devices, including electronic keyboards, visual displays, and printers.

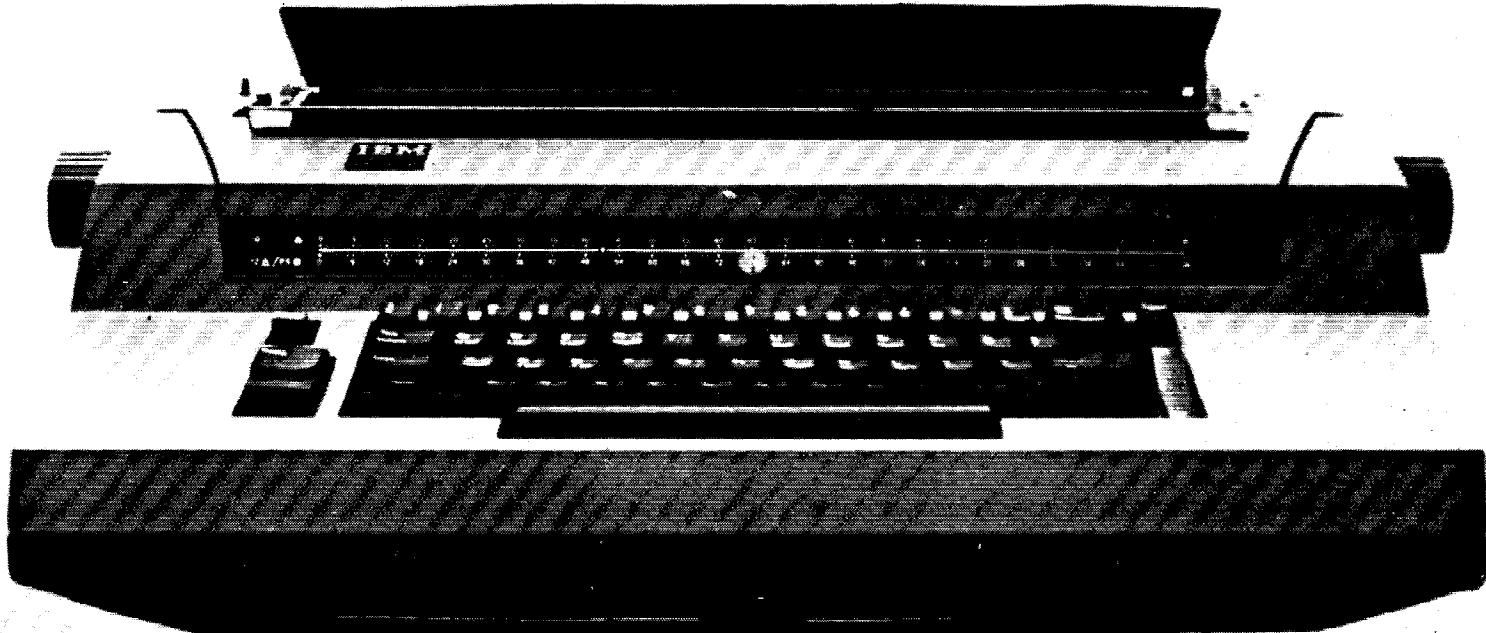
Category VI

Timesharing word processing. The use of a central processor (usually a main-frame computer) to provide memory and text processing capability to remote input and output stations, often over communications lines.

1/Provided by the Army word processing program of the Adjutant General.

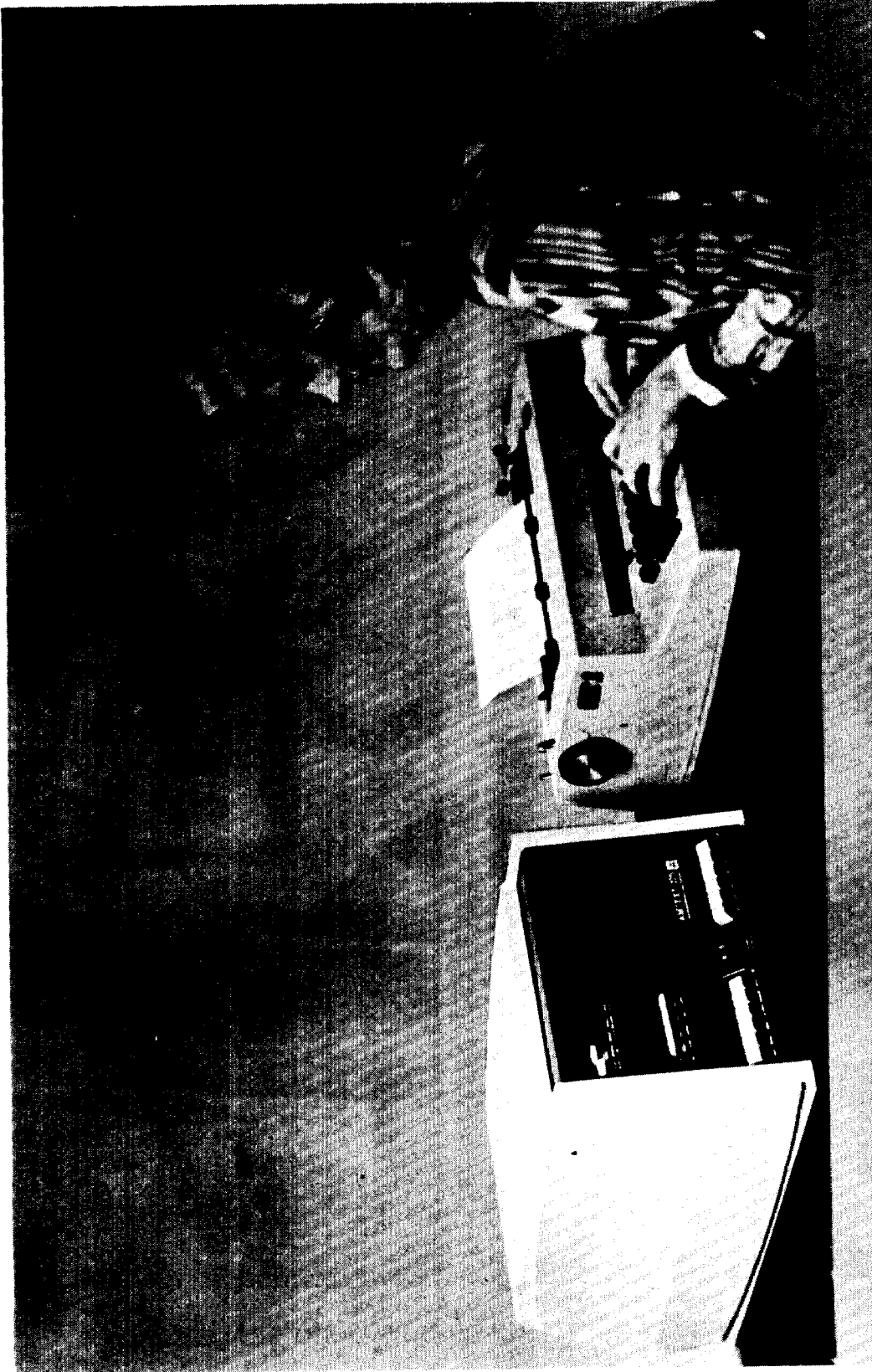
Interface devices. Can be connected directly to a word processor. They include:

- Optical character readers which can directly read typed copy and then input into a word processor, thus eliminating keyboarding on the word processor.
- High-speed printers that are referred to as nonquality printers designed to produce drafts at high speed.
- Nonimpact printers which are output devices varying in techniques and designed for producing final copy printing and other applications.



(DEPARTMENT OF THE ARMY PHOTOGRAPH)

CATEGORY I - ELECTRONIC TYPEWRITER



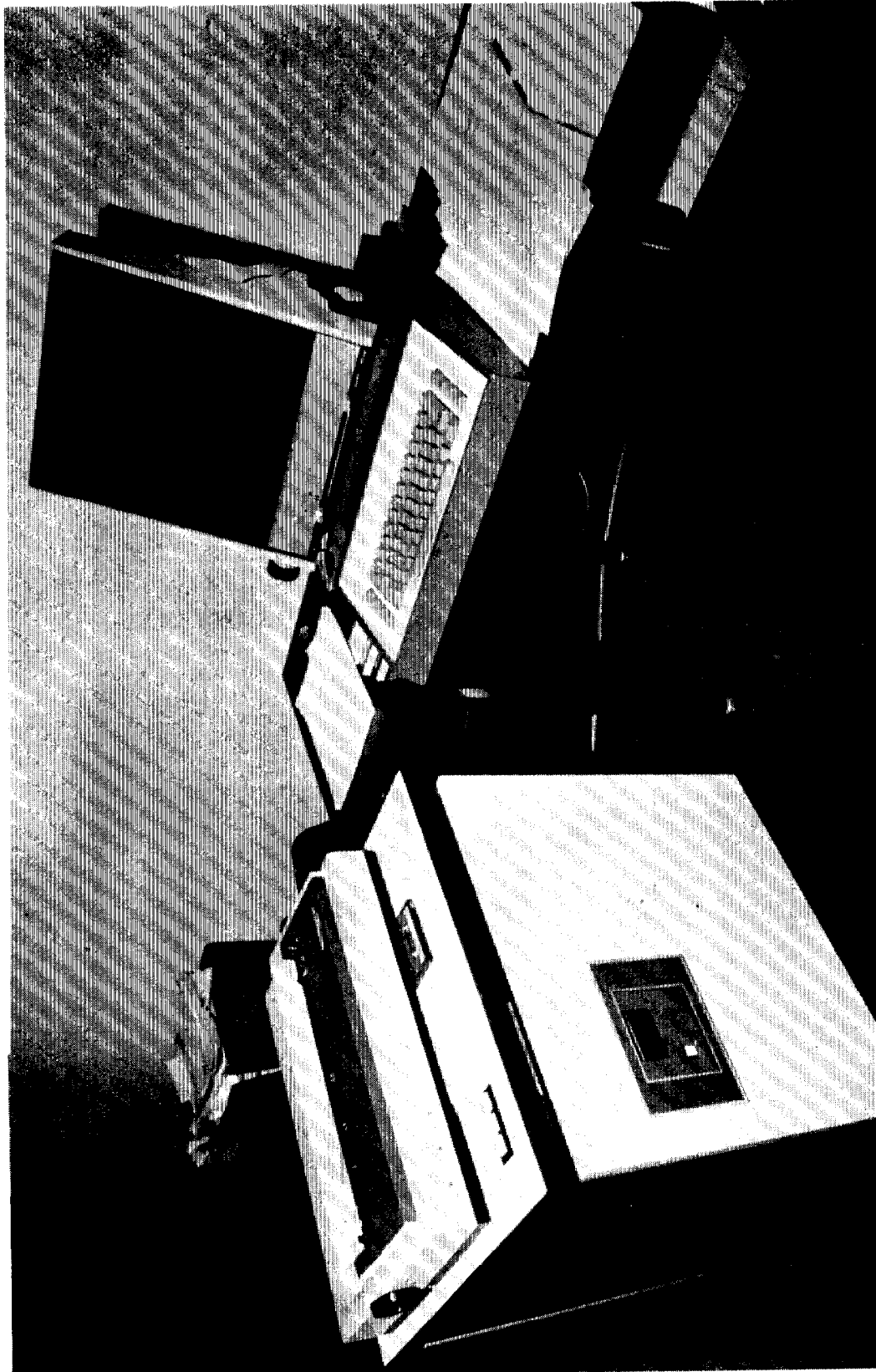
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CATEGORY II - BLIND WORD PROCESSOR

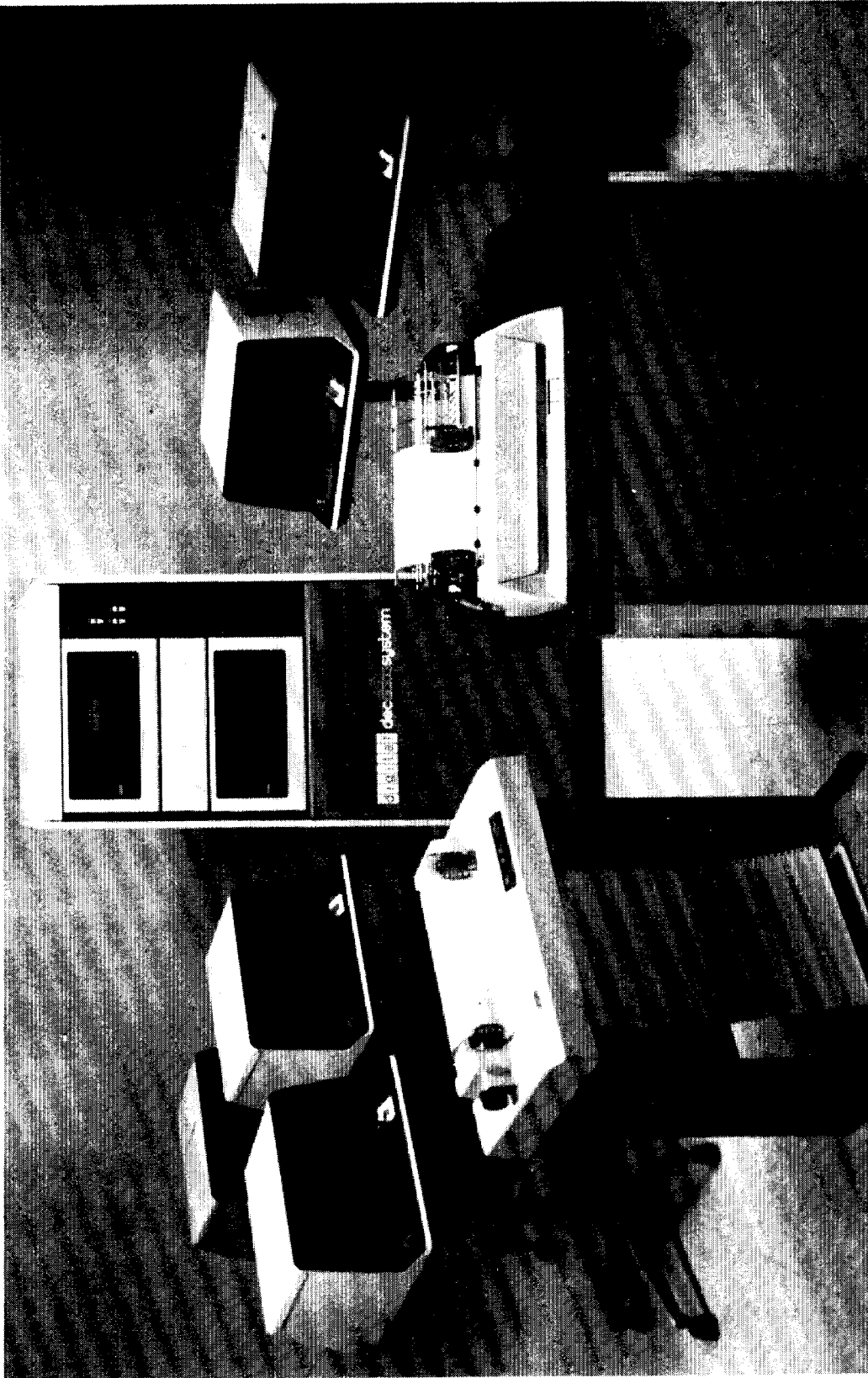


(DEPARTMENT OF THE ARMY PHOTOGRAPH)

CATEGORY III – THIN-WINDOW WORD PROCESSOR

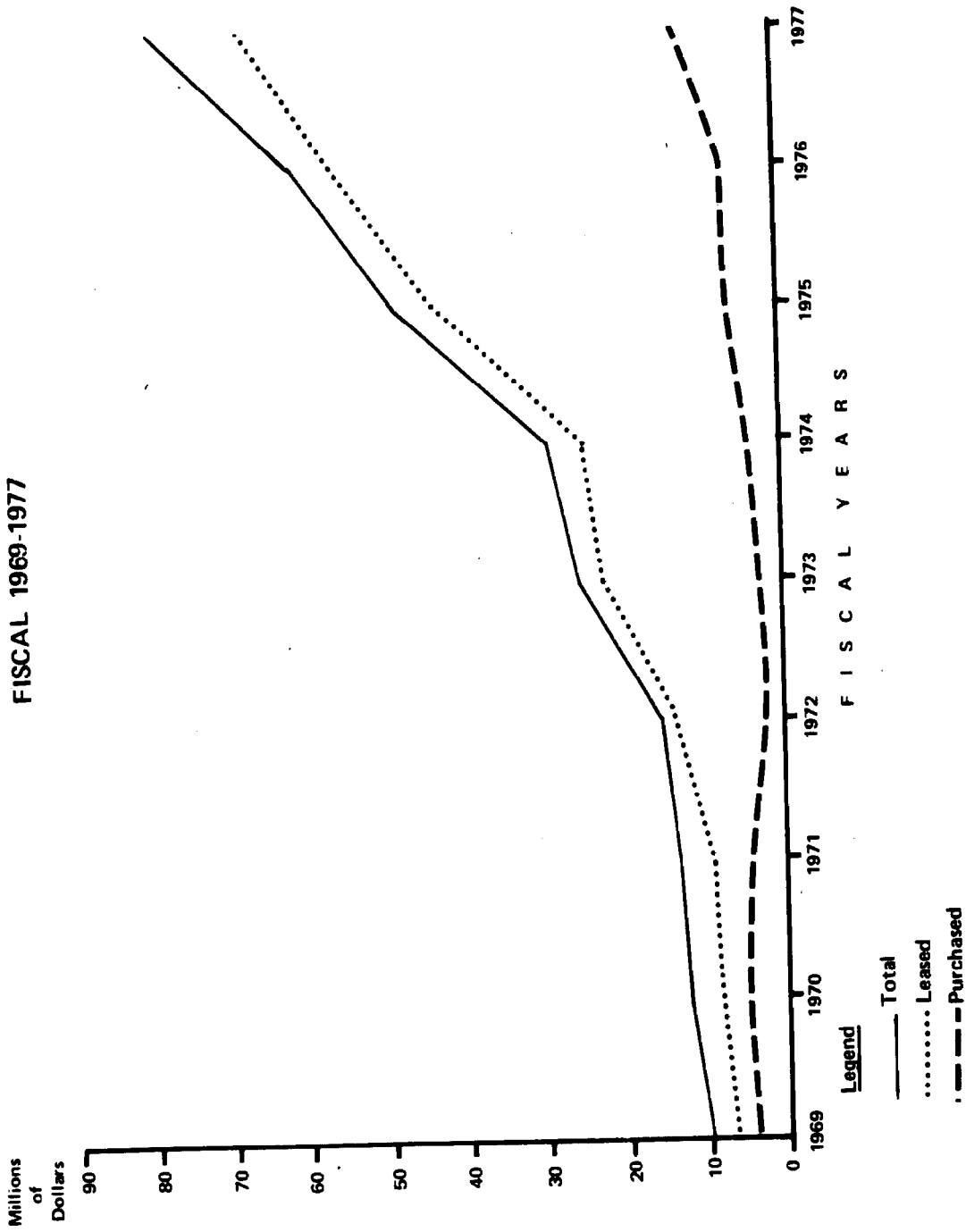


CATEGORY IV - DISPLAY (VISUAL) TEXT EDITOR



(DEPARTMENT OF THE ARMY PHOTOGRAPH)
CATEGORY V - SHARED LOGIC OR MINICOMPUTER TEXT EDITOR

WORD PROCESSING EQUIPMENT EXPENDITURES
FISCAL 1969-1977



WORD PROCESSING EQUIPMENT EXPENDITURES

<u>Fiscal</u> <u>year</u>	<u>Purchases</u>	<u>Rentals</u>	<u>Totals</u>
	<u>(millions)</u>		
1969	\$ 3.7	\$ 6.6	\$10.3
1970	4.0	7.7	11.7
1971	3.9	9.1	13.0
1972	2.2	13.0	15.2
1973	2.7	22.1	24.8
1974	4.2	24.7	28.9
1975	6.2	42.5	48.7
1976	6.5	55.9	62.4
1977	12.8	67.3	80.1

STATUS OF AGENCIES' WORD PROCESSINGHANDBOOKS REVIEWED BY GAO

(As of August 1978)

<u>Department/agency</u>	<u>Issuance</u>
Health, Education, and Welfare	Sept. 1971
Drug Enforcement Administration	Feb. 1975
Department of the Army	Apr. 1975
Social Security Administration	Feb. 1977
Federal Aviation Administration	Mar. 1977
Office of Education	Aug. 1977
Department of the Air Force	Sept. 1977
Internal Revenue Service	Sept. 1977
General Services Administration	Dec. 1977
Department of Justice	July 1978
Department of Agriculture	Draft
Environmental Protection Agency	Draft
Department of the Navy	Draft
Department of Transportation	Draft

AGENCIES COMPLIANCE WITH THE FEDERAL PROPERTYMANAGEMENT REGULATIONS AS REVIEWED BY GAO
(As of August 1978)

<u>Department/agency/activity</u>	<u>Established review procedures</u>	<u>Determined cost effectiveness/ developed cost analysis</u>	<u>Developed and maintains inventory</u>	<u>Established productivity evaluation procedures</u>	<u>Periodically audited applications</u>
Department of Agriculture	Yes	No	Yes	No	No
Food and Nutrition Service	a/ Yes	No	Yes	a/ Yes	Yes
Mid-Atlantic Region	a/ Yes	No	No	a/ Yes	Yes
Department of Commerce	No	No	Yes	No	No
National Bureau of Standards	No	b/ Yes	Yes	No	No
Department of the Army	Yes	Yes	Yes	Yes	No
Logistics Evaluation Agency	Yes	No	No	Yes	No
Department of the Navy	Yes	No	Yes	No	No
Naval Air Development Center	No	No	No	No	No
Department of Health, Education, and Welfare	Yes	No	No	No	No
Social Security Administration	Yes	Yes	Yes	No	Yes
Bureau of Data Processing	Yes	Yes	Yes	Yes	No
Office of Education	Yes	b/ Yes	Yes	No	No
Region III	No	No	No	No	No
Region VII	Yes	No	Yes	No	No
Department of Housing and Urban Development	No	No	No	No	No
Region III	No	No	No	No	No
Region VII	No	No	No	No	No
Department of the Interior	No	No	No	No	No
National Park Service	No	No	No	No	No
Mid-Atlantic Region	No	No	No	No	No
Department of Justice	Yes	No	Yes	No	No
Drug Enforcement Administration	Yes	No	Yes	Yes	No
Region 3	Yes	No	Yes	No	No
Region 10	Yes	No	Yes	No	No
Department of Transportation	Yes	No	No	No	No
Federal Aviation Administration	Yes	No	Yes	No	No
Aeronautical Center	Yes	No	Yes	No	No
Central Region	Yes	No	Yes	No	No
National Aviation Facilities Experimental Center	Yes	No	Yes	No	No
Department of the Treasury	Yes	b/ Yes	Yes	No	No
Internal Revenue Service	Yes	b/ Yes	Yes	No	No
Mid-Atlantic Region	Yes	b/ Yes	Yes	No	No
Environmental Protection Agency	c/ No	b/ Yes	Yes	No	No
Region III	c/ No	b/ Yes	No	No	No
Region VIII	No	No	No	No	No
General Services Administration	Yes	b/ Yes	Yes	Yes	No
Federal Supply Service	No	b/ Yes	Yes	No	No
Region 6	Yes	Yes	Yes	No	No
National Aeronautics and Space Administration	No	No	No	No	No
Nuclear Regulatory Commission	Yes	Yes	Yes	No	No
Region I	No	No	No	No	No

a/Interim guidelines

b/Activity made a one-time special study of cost effectiveness

c/Activity has draft regulation



General
Services
Administration Washington, DC 20405

JAN 24 1979

Mr. Donald L. Scantlebury
Director of Financial and
General Management Studies Div.
Room 6001
General Accounting Office
Washington, DC 20548

Dear Mr. Scantlebury:

As requested by your letter of November 22, we have reviewed the draft report, "Federal Productivity Suffers Because Word Processing is Not Effectively Managed," your three copies of which are returned herewith. We share GAO's concerns about (1) the proliferation of word processing (WP) equipment, (2) agencies' lack of compliance with the WP Federal Property Management Regulation (FPMR), and (3) their inability to demonstrate that the acquisition and use of WP equipment has resulted in productivity increases sufficient to offset the additional cost of the equipment.

We are also committed to the principles of productivity, and we will promote word processing whenever the result is cost-effective. Frankly, however, we feel that any hesitancy by agencies to use the WP technology is a much lesser problem than over-proliferation.

The proliferation and underutilization of WP equipment, as well as most of the other major problems identified in the draft report, are actually symptoms of the larger and more fundamental problem of poor or non-existing productivity standards. If we are successful in our current efforts to limit WP feasibility considerations to repetitive typing only, we believe that we can considerably reduce the Government's \$300 million annual expenditure that the report estimated for 1982.

We believe that more carefully thought out procurement is the long term solution for underutilization, and, in the short run, we wonder about the "solution" of finding more work for WP equipment. While that could increase utilization and perhaps even productivity, it could have offsetting or more wasteful consequences. For example, management's efforts to fill available time on WP equipment should not result in individual "personalized" letters being prepared where form letters are

adequately effective. Neither should it lead to the retyping of letters to eliminate minor errors suitable for pen-and-ink correction or to the use of WP equipment for work equally or more suitable for electric typewriters.

We know that you are also aware that apparent productivity increases can result from using WP equipment to compensate for unskilled typists. True, WP equipment can very possibly result in a poor typist turning out 40 acceptable pages per day instead of 20--an impressive productivity increase of 100 percent. But skilled typists produce even more pages per day on an electric typewriter, and skilled WP operators working on highly repetitive material can produce many times more pages.

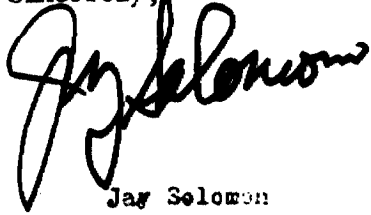
Properly, the GAO report carefully qualifies its description of WP equipment as a "dramatic breakthrough," a "powerful tool," and a means for controlling increases in clerical employment. We believe the report should also strongly emphasize that WP equipment will be cost-effective only if there is so much purely repetitive work that the use of WP equipment will produce savings to offset its cost. The use of WP equipment for original typing, as opposed to repetitive typing, is never cost-effective. The use of WP equipment will, therefore, result in increased cost-effective production only if it is used primarily for repetitive typing.

The WP definition issue is not just a matter of preference. It is fundamental because it identifies factors relevant to assessing the cost-effectiveness of an operating or proposed WP system. The issue is treated at some length in the enclosed paper, which emphasizes the importance of GAO's decision to accept or reject the 1977 definition.

We have also treated rather extensively the question of NARS' WP guidance and leadership, particularly as measured by the decision to not publish the critically defective 1975 draft handbook. In our opinion, the GAO report does not give sufficient recognition to any of seven functional areas other than handbook publication where NARS has responsibilities for and has provided significant WP guidance. Neither does the report acknowledge that NARS has taken steps to simplify a concept that has been unwisely complicated and to prescribe a relatively easy method for assessing WP cost-effectiveness. This change in stance and the accompanying necessary delays were bound to result in criticism, but we felt that redirection was necessary if WP was ever to be well managed in the Government. Agencies have obviously not voluntarily or enthusiastically followed NARS' leadership. Whether they will adhere to our regulations in the future, and the speed with which they adopt the revised criteria will be significantly influenced by GAO's assessment of the merits of GSA's WP position and of GSA's effectiveness in promoting good WP management.

The last segment of the enclosed paper comments on the report's recommendations and, also as requested, outlines GSA's planned actions for correcting the reported deficiencies.

Sincerely,

A handwritten signature in black ink, appearing to read "Jay Solomon". The signature is written in a cursive, flowing style.

Jay Solomon
Administrator

Enclosure

GSA COMMENTS ON RECOMMENDATIONS

Page 12. "To improve the agencies' management of word processing, the Administrator of General Services should upgrade and accelerate efforts to assist and monitor agencies' efforts."

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"a. This year's resources for WP [word processing] efforts are greater than any previous year's but are committed to the planned Government-wide inspection and development of standards that will be incorporated in our proposed technical manual for providing guidance on how to conduct WP cost-benefit analysis. We plan to provide standards and guidelines for developing, operating, and evaluating WP systems, but because of limited resources will not be able to do so until next year.

"b. We will ensure that the plans for our WP inspection include an assessment of agencies' efforts to find cost-effective WP applications.

"c. Besides the Government-wide inspection discussed above, NARS conducts one or more intensive single-agency records management inspections each year. We will ensure that each such inspection includes an assessment of WP management.

"d. We are already a WP clearinghouse and routinely answer agencies' requests relating to any aspect of WP management. Unfortunately, we have not been able to divert to the clearinghouse function any significant resources needed for more critical functions (training courses, technical manuals, research, etc.). We have asked agencies, through our newsletter and training courses, to provide us with copies of studies and other materials that would probably be helpful to others with similar needs, but we have not received much material. We may not have sufficient resources in the near future to effectively carry out the clearinghouse function.

"Page 12. GAO also recommends that the Administrator expedite issuance of a word processing handbook as an aid to agencies in developing and operating word processing systems. The handbook should include sections on equipment and productivity standards and should be updated periodically to reflect changes in technology, equipment configurations, or other activities in the field."

"We are expediting the preparation of the handbook for conducting word processing cost-benefit analyses, which will be sent to the printer in June. This manual probably meets some, but not all of GAO's interest in NARS guidance for "developing" WP systems and for part of the evaluation phase of "operating" WP systems. To the extent that the manual being prepared does not wholly satisfy this recommendation, complete implementation will need to be deferred into FY 1980 for the resource reasons given above.

"Page 21.

'We recommend that the Administrator of General Services review as expeditiously as possible agency guidelines for implementing and monitoring word processing systems. If GSA identifies deficiencies in the agency guidelines or no guidelines exist, it should assist the agencies and closely monitor their progress in developing these guidelines.'

"This recommendation will be affected by NARS' planned inspection of Federal agencies' word processing management practices. The inspection, which will begin this FY, will include an assessment of agencies' compliance with the 1977 FPMR, which covers the implementing and monitoring of word processing systems. Our inspection system includes the requirement (FPMR 101-11.103-4) that agencies submit action plans for NARS' review and monitoring.

"Page 21.

'We believe that a key factor in the initial and continuing success of any word processing system is careful attention to personnel planning and management of the system. Because of this we recommend that General Services work with the Office of Personnel Management so as to assure that human relations aspects of word processing are not ignored.'

"We agree that personnel planning and management are vital to word processing systems--and probably to all systems and corporate endeavors. We also agree that the Office of Personnel Management (OPM) should address those concerns. As GSA is not in a position to give any assurance that OPM will provide the needed attention to the human relations aspects of word processing, the GAO report should address the recommendation to OPM, not GSA. We can"

"however, assure you that we will be pleased to work with OPM in that effort, to the extent that our WP-management expertise can be useful."

GAO NOTE:

In addition to its letter and above comments, the General Services Administration's response included other detailed comments on the matters discussed in this report. We discussed these comments with GSA officials and made changes to the body of the report where appropriate. GSA's detailed comments are not included because they are lengthy and did not take exception to the report's basic issues.

GSA WORD PROCESSING BULLETIN B-86

GSA recently issued a bulletin (see pp. 44-46) outlining a suggested methodology for evaluating the cost effectiveness of a new or existing word processing system. We did not evaluate this methodology; however, the concept of increasing output while reducing input or resources should be the basis of any analysis to determine if word processing should be used. It should also be noted that this analysis does not consider the personnel side of word processing which this report indicates is crucial to the success or failure of any new system.

GENERAL SERVICES ADMINISTRATION
WASHINGTON, D. C. 20405

January 17, 1979

GSA BULLETIN FPMR B-86
ARCHIVES AND RECORDS

TO : Heads of Federal agencies

SUBJECT: Use of word processing equipment

1. Purpose. This bulletin clarifies Federal agencies' responsibilities to ensure that word processing equipment (WPE) is being acquired and used in a cost effective manner, as required by FPMR 101-11.903. Word processing equipment (WPE) is being acquired and used where it is not cost effective. The current methodology generally used in word processing feasibility studies may lead to erroneous conclusions about the potential for cost-effective use of WPE. This bulletin informs agencies about a more accurate method, considering revision typing as either original typing or repetitive typing, but not as a separate category of its own.
2. Expiration date. This bulletin contains information of a continuing nature and will remain in effect until superseded.
3. Definitions. As used in this bulletin:
 - a. An electric typewriter is a keyboard device that cannot store or record keystrokes for automatic playback.
 - b. Word processing equipment (WPE) is a keyboard device capable of controlled storage, retrieval, and automated typing.
 - c. Original typing is the first typing of a line or the retyping of a line that has been changed.
 - d. Repetitive typing is the retyping of a line that remains unchanged.
 - e. Revision typing is the retyping of a document containing a mixture of changed and unchanged lines; i.e., a combination of original and repetitive typing.
4. Background.
 - a. Word processing equipment (WPE) costs 6 to 30 times more than electric typewriters. Federal agencies are spending an estimated \$80 to \$100 million annually to lease and purchase WPE. Expenditures are increasing at an estimated rate of nearly 25 percent a year.
 - b. Before WPE is acquired, a WPE feasibility study is required by FPMR 101-11.903 to determine whether WPE would be cost effective. However,

GSA Bulletin B-86

January 17, 1979

current methodology for WPE feasibility studies has led to some inaccurate conclusions. In many instances, despite a feasibility study conclusion that WPE would be cost effective, it has not been so in operation.

c. The current methodology generally used in word processing feasibility studies categorizes typing as original, revision, or repetitive. Significant productivity increases can result from the use of WPE for repetitive typing, but the use of WPE for original typing generally does not result in productivity increases. The ratio of repetitive to original typing is needed to determine if WPE can be cost effectively used. To determine the ratio of repetitive to original typing, revision typing must be divided into original typing and repetitive typing and the volume of each separately determined.

5. Determining cost effectiveness in acquiring WPE.

a. Identifying total annual costs. To determine cost effectiveness an agency should determine its annual equipment and personnel costs required to type on electric typewriters the total number of original and repetitive lines produced annually by the work stations for which WPE is being considered. Certain repetitive typing, such as identical letters or multiple addressees and standard responses to inquiries, should not be counted when copies or form letters would be appropriate and more cost effective. Total annual costs should be determined as follows:

(1) Compute personnel costs required to type on electric typewriters the number of original and repetitive lines of representative material normally produced in 2 weeks (a minimum test period reflecting an average workload) and multiply by 26.

(2) Determine annual equipment costs by amortizing the original cost of the electric typewriter(s) over a 5-year period.

(3) Add annual personnel and equipment costs to determine total annual costs.

(4) Compute the total annual costs required to produce the same or similar material on the WPE under consideration in the same manner as described above. If applicable use actual lease costs and include maintenance costs. Include any additional costs that would result from the proposed use of WPE that would not be incurred if electric typewriters were used; e.g., space-alteration costs, carpeting, drapes, etc.

(5) If the total annual cost of using WPE is greater than that of electric typewriters, WPE should not be used.

b. Saving time by using WPE may not result in cost savings. In conducting cost analyses for WPE feasibility studies, agencies should distinguish carefully between (1) actual cost savings and (2) benefits that may

January 17, 1979

GSA Bulletin FPMR B-86

not result in actual cost savings. Time saved by using WPE will result in cost savings if personnel positions or overtime are reduced, or if the time saved can be used to accomplish other essential work. Only actual cost savings should be used when conducting cost analyses.

6. Determining cost effectiveness of WPE currently in use. Agencies should take the following steps to assess the cost effectiveness of current WPE applications:

a. Eliminate WPE repetitive typing production of correspondence for which form letters or copies could be used.

b. Use the methodology prescribed in subparagraph 5a to compare the cost of WPE with that of electric typewriters.

c. Terminate leases or allow them to expire, whichever is more advantageous to the Government, if leased WPE is not cost-effectively used.


d. Take appropriate remedial action, if owned WPE is not cost-effective, such as:

(1) Consolidate material with a high ratio of repetitive-to-original typing for production by WPE, and use less WPE;

(2) Increase the amount of time the WPE is operated, to reduce production costs to a cost-effective level; and

(3) Reassign the excess WPE to a cost-effective use elsewhere in the agency. If there is a cost-effective use of leased WPE in the agency, terminate the leased equipment and replace it with excess owned equipment. A moratorium on WPE acquisition should be declared until all currently owned equipment is cost-effectively used.

7. Assistance to agencies. Additional guidance may be obtained by contacting the Chief, Automated Information Management Branch, National Archives and Records Service, (202) 376-8838; mailing address: General Services Administration (NROI), Washington, DC 20408.



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