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REPORT BY THE

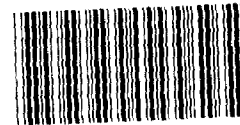**RELEASED**

Comptroller General

OF THE UNITED STATES

Better Information Management Could Alleviate Oversight Problems With GSA's Construction Program

GSA's Public Buildings Service's methods to track its construction and repairs and alterations projects are an inadequate combination of automated and manual efforts which are not effective as a management oversight tool. This tracking system is not capable of providing complete and meaningful information on project costs, scope, and schedule variances and cannot provide reliable oversight reports because of design deficiencies and errors in the automated system's data base.

GAO recommends a number of steps that the Administrator of General Services and the Commissioner of Public Buildings Service need to take to improve the tracking system's reliability and GSA's overall information resources management.

GSA and the Public Buildings Service concur with GAO's conclusions and recommendations, and actions have been taken or promised to correct the identified problems.

118980

GAO/PLRD-82-87
JULY 9, 1982

B-207804

The Honorable John G. Fary
Chairman, Subcommittee on Public
   Buildings and Grounds
Committee on Public Works and
   Transportation
House of Representatives

Dear Mr. Chairman:

This report is in response to your request that we look
into the General Services Administration's (GSA's) Public
Buildings Service's ability to provide accurate and timely
information on construction projects. This is the last of
three reports requested regarding GSA's construction activities.

The prior reports were "What Has GSA Done to Resolve Pre-
viously Reported Problems in Its Construction Program?" (PLRD-
87-7, March 27, 1981) and "GSA's Planned Program to Evaluate
Completed Construction Projects Can Benefit Future Construction"
(PLRD-81-56, July 27, 1981).

As arranged with your Office, unless you publicly announce
its contents earlier, we plan no further distribution of this
report until 10 days from the date of the report. At that time,
we will send copies to other appropriate congressional committees;
the Director, Office of Management and Budget; and the Adminis-
trator of General Services. We will also make copies available
to others upon request.

Sincerely yours,

Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE CHAIRMAN,
SUBCOMMITTEE ON PUBLIC BUILDINGS
AND GROUNDS, COMMITTEE ON PUBLIC
WORKS AND TRANSPORTATION,
HOUSE OF REPRESENTATIVES

BETTER INFORMATION
MANAGEMENT COULD ALLEVIATE
OVERSIGHT PROBLEMS WITH
GSA'S CONSTRUCTION
PROGRAM

D I G E S T

The General Services Administration's (GSA's)
Public Buildings Service is responsible for
managing GSA's construction, acquisition,
and repair and alterations programs.
Current methods used for oversight of GSA's
construction program are an ineffective
combination of automated and manual efforts.

Information on project cost, scope, and schedule
variances is not routinely provided to con-
gressional committees or GSA top management nor
is it accurate or timely. The lack of this
information precludes the Congress from effec-
tively evaluating progress on approved projects
and identifying cost overruns and delays. Also,
the Administrator of General Services is pre-
cluded from taking timely action to avoid prob-
lems on major projects.

Extensive manual efforts are required to gener-
ate oversight information reports, in spite of
the availability of an automated information
system designed to collect the needed data.
Further, GSA's information management organi-
zation is not structured or properly positioned
to effectively resolve such problems nor respond
to the needs of program managers. However, GSA
is in the process of reorganizing the agency,
and the proposed new management organization
should provide an appropriate structure and
and position to resolve information resources
management problems.

TRACKING SYSTEM IS INEFFECTIVE
AS AN OVERSIGHT TOOL

The automated tracking system cannot provide
complete and meaningful project performance
information and it does not provide reliable
oversight reports because its data base con-
tains inaccurate and outdated information.
GAO found that:

--GSA has never completed the required post-
  implementation system review/evaluation
  to determine whether the system was
  designed and is functioning properly.

--The system's integrity and reliability are
  not maintained because users do not follow
  the National Bureau of Standards' Federal
  Information Processing Standards.

--Use of the system is not required nor do
  the GSA regions adequately support it.

As a result, GSA is paying over a million dol-
lars a year for a system which must be supple-
mented by manual efforts to obtain needed
building repair, alteration, and construction
oversight information. (See p. 8.)

GAO recommends that the Administrator of General
Services

--conduct a post-implementation system review
  on the Public Buildings Service's automated
  tracking system;

--acquire computer graphics capability which
  is cost effective to eliminate the exten-
  sive manual efforts expended in preparing
  management reports; and

--correct the input error problem through
  training, and possibly by acquiring better
  input devices, such as optical readers or
  other new input technology.

GAO also recommends that the Commissioner of
the Public Buildings Service and GSA's desig-
nated Information Resources Manager

--correct and improve the automated tracking
  system or acquire another existing system;

--require the use of whichever system is
  ultimately selected; and

--enforce the timely input of required data
  into the selected system.

(See pp. 18 and 19 for additional recommenda-
tions.)

CONSOLIDATING AND ELEVATING
INFORMATION RESOURCES MANAGEMENT
COULD IMPROVE GSA'S OVERSIGHT

The problems identified in this review are indicative of deeper ones in GSA's overall information resources management. For example, GSA has been unable to resolve long-standing interface problems between automated systems and to strengthen coordination among organizational units. These problems make it unlikely that the Public Buildings Service will be able to unilaterally resolve all of the deficiencies in its system. Top management of GSA must support and actively participate in the solutions. (See p. 20.)

Weaknessess in GSA's management of information resources, particularly data processing, are the underlying cause of some of the problems being experienced in operating the repair and alteration and construction automated tracking system. For example, GSA's data processing management has not taken action to correct system interface problems involving the automated tracking system and GSA's financial accounting system. (See p. 27.)

Until the Paperwork Reduction Act of 1980 required the appointment of an information resources manager, GSA had not established a forum or referee to resolve conflicts between managers of the various automated data processing resources within the agency. (See p. 29.)

In its report accompanying the Paperwork Reduction Bill, the House stated that it expected each agency to establish a central information management unit, subject to the review and approval of the agency-level unit headed by the designated senior official. The House wanted this high-level placement so that the needs of the total agency are considered, and not just the needs of subordinate departments. (See p. 34.)

As an interim move, the Administrator appointed his deputy as GSA's senior official responsible for information resources management. GSA needs to name its permanent senior official as soon as possible. (See p. 36.)

GSA has taken a number of actions to improve
management problems GAO identified in this
report. (See p. 37.)

RECOMMENDATIONS

GAO recommends that the Administrator of
General Services

--appoint a senior official experienced in
   information management as the permanent,
   full time, information resources manager;

--require top management's involvement and
   cooperation in information resources management
   and emphasize the senior official's authority
   over all GSA information resources management
   activities; and

--establish a central information resources
   management office, headed by the senior offi-
   cial, consolidating existing offices. This
   office should include such information
   resources management-related subcomponents
   as deemed necessary for the senior official
   to carry out his responsibilities.
   (See p. 38.)

AGENCY COMMENTS

GSA concurred fully with GAO's findings, con-
clusions, and recommendations. Actions are
being taken to effectively establish informa-
tion resources management within GSA. Actions
were also promised to correct the problems
with the construction project information
system. (See pp. 19 and 39.)

GAO's review was requested by the former Chair-
man, Subcommittee on Public Buildings and
Grounds, House Committee on Public Works and
Transportation.

C o n t e n t s

ABBREVIATIONS

ADP	automated data processing
FIPS	Federal Information Processing Standards
GAO	General Accounting Office
GSA	General Services Administration
IRM	information resources management
NAPA	National Academy of Public Administration
PBS	Public Buildings Service
RACATS	Repair and Alteration and Construction Automated Tracking System

CHAPTER 1

INTRODUCTION

The General Services Administration's (GSA's) Public Buildings Service (PBS) is responsible for, among other things, administering the Federal Buildings Fund and managing GSA's construction and acquisition program and its repair and alterations program. It plans, manages, and oversees the design, construction, alteration, remodeling, and repair of public buildings. In recent years the construction program has been relatively small—about $18 million in fiscal year 1981 and $27 million (requested) for fiscal year 1982. However, if proposed legislation restricting leasing of needed office space is passed, this program could increase substantially. The repair and alterations program was $180 million in fiscal year 1981 and $197 million has been requested for fiscal year 1982.

Information management is an important part of PBS's responsibilities in managing these programs. To aid it in fulfilling its mission responsibilities, PBS uses both manual and automated management information systems. The manual systems are numerous and generally have been developed by individual managers to meet their specific information needs. Recognizing that these manual systems are not effective or efficient for its oversight responsibilities, PBS has developed a large-scale management information system consisting of several individual systems serving the needs of the various segments of the organization. Figure 1-1 shows some of the more important individual systems of the PBS information system, including the Repair and Alteration and Construction Automated Tracking System (RACATS). The overall information system is intended to assist all levels of PBS management in fulfilling their operational and administrative responsibilities by providing them with data they need to monitor activities and make program decisions. It was designed as a modularly expandable system to keep pace with changes in PBS requirements and needs as they occur.

This report discusses only the RACATS portion of the PBS information system, and to some extent, the interface between RACATS and other systems. RACATS is the automated system developed to monitor design, construction, alteration, renovation, and repair projects.

BACKGROUND ON RACATS

RACATS was developed in response to recommendations contained in a 1975 study of the information needs of the construction, repair, and alteration functions of PBS. This study was done under contract by an outside computer consultant. It called for three outmoded automated systems—the Status Reporting System and the Resource Management System, both controlled by the PBS central office, and the Repair and Alteration Computer Oriented System,

Figure 1-1 PBS Information System

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                    ┌─────────────────────────┐
                    │ Public Buildings Service │
                    │    Information System    │
                    └─────────────────────────┘
                                  │
   ┌──────────────────────┐       │      ┌──────────────────────────┐
   │                      │       │      │  Repair and Alteration and│
   │ Space Management     ├───────┼──────┤ Construction Automated    │
   │ System               │       │      │ Tracking System           │
   └──────────────────────┘       │      └──────────────────────────┘
                                  │
   ┌──────────────────────┐       │      ┌──────────────────────────┐
   │ Fair Annual Rental   │       │      │ Rental Expenditure and    │
   │ Rate System          ├───────┼──────┤ Projection System         │
   └──────────────────────┘       │      └──────────────────────────┘
                                  │
   ┌──────────────────────┐       │      ┌──────────────────────────┐
   │ Federal Protection   │       │      │ Custodial Management      │
   │ Service Manpower      ├───────┼──────┤ System                    │
   │ Allocation Model     │       │      └──────────────────────────┘
   └──────────────────────┘       │
                                  │
              ┌──────────────────────────────────────┐
              │              OTHER                    │
              │ Various installed and prototype       │
              │ management subsystems supporting      │
              │ public buildings service operations   │
              └──────────────────────────────────────┘
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which was controlled by the individual regional offices--to be replaced by a consolidated and enhanced system.

RACATS objectives

The consultant's recommendations were aimed primarily at improving operational efficiency of PBS by eliminating wasteful activities. For example, the objectives of consolidating the three existing systems were to (1) minimize user input requirements, (2) eliminate duplicate data entry and storage requirements, and (3) reduce operating costs. The overall objective of the recommendation was to provide PBS management with a tool to monitor projects from beginning to end, using a single, interrelated source of information. RACATS was the system developed to realize these objectives.

PBS' desire was to provide its Repair and Alterations Division and its Office of Design and Construction with sufficient, timely, and accurate information to enable them to efficiently perform their respective responsibilities to plan, order, manage, and oversee the design, construction, alteration, renovation, and repair of public buildings. In implementing the consultant's recommendations for a new information system for tracking repair, alteration, and construction projects, PBS appears to have also concluded that existing manual systems were not responsive to its needs. RACATS was designed to be a source for oversight information. Assuming that new information was timely and was placed into the system accurately, this common data base would be current at all time and therefore more responsive as an over-sight tool. However, as discussed in chapter 2, the lack of timely, accurate input is one of the major weaknesses plaguing the system. RACATS has been operational since 1978.

RACATS capabilities

RACATS was designed to support the following functional areas within PBS

--prospectus development and approval monitoring;

--repair and alteration plans, program, and budget development;

--repair and alteration work items, project authorization, and work authorization monitoring;

--the Office of Design and Construction in allocating resources, scheduling and monitoring projects, monitoring purchase orders and contracts, and distributing labor costs; and

--Construction Services Fund advance processing.

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RACATS users

The prime users of the system are the central office and regional offices of the Office of Design and Construction and the Repair and Alteration Division of the Office of Buildings Management within PBS. In addition, the Administrator of General Services uses information produced by the system. The Subcommittee on Public Buildings and Grounds, House Committee on Public Works and Transportation, would like to have direct access to RACATS information, if it is reliable and timely. Information routinely provided the Subcommittee is currently obtained from project files rather than from RACATS.

Cost of operating the system

PBS is billed on a fixed flat-rate basis for the entire PBS information system, including RACATS. In addition, some variable costs, including amounts for disc and tape storage and other miscellaneous charges, are added to the billing. Billings are not broken down either by computer time used or by subsystem usage. In fiscal year 1981, PBS spent about $5.8 million to operate the full PBS information system. PBS officials estimate that RACATS usage represented 18 percent of the entire system cost, or about $1.1 million for fiscal year 1981. The current time-sharing RACATS contract expires in March 1983.

OBJECTIVES, SCOPE, AND METHODOLOGY

Our review was made at the request of the former Chairman, Subcommittee on Public Buildings and Grounds, House Committee on Public Works and Transportation. The Subcommittee was concerned that PBS's construction management information system was not functioning well in that it appeared to be suffering from weak internal control; contained inaccurate data; and failed to provide PBS, the Administrator of General Services, and the Congress with needed information in a timely manner. The Subcommittee was particularly concerned about the system's ability to track the cost, scope, and schedule of GSA's major construction and renovation projects.

Objectives

The primary objective of our review was to evaluate the ability of GSA's oversight mechanism, consisting of RACATS and manual efforts, to respond to the needs of PBS and provide project status information needed by the Administrator of General Services and congressional committees. Our secondary objective was to evaluate the reliability, timeliness, and usefulness of the information generated by the system.

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Scope

Our review was completed in the fall of 1981. The review included work at the Administrator and Regional Administrator levels of GSA and the central office and regional offices of PBS. In addition to GSA headquarters in Washington, D.C., work was done in the National Capital Region, Washington, D.C.; Region 1, Boston, Massachusetts; Region 2, New York, New York; and Region 6, Kansas City, Missouri. These offices were selected because they were managing mixes of construction and repair and alteration projects in various stages of completion.

As a result of a change in the chairmanship of the Subcommittee following the request, we met with the Subcommittee staff several times during the review to obtain agreement on the audit scope and approach to ensure that our work would be responsive to the Subcommittee's needs.

Methodology

In both planning and conducting the review, we used GAO's "Standards for Audit of Governmental Organizations, Programs, Activities, and Functions" 1981 revision, "Evaluating Internal Controls in Computer-based Systems" (AFMD-81-91, June 1981), and "Audit Guide for Assessing Reliability of Computer Output" (FGMSD-No. #17-S/P '78, May 1978). We used one of the questionnaires in this latter guide--"User Satisfaction Questionnaire--Computer-Processed Products"--to obtain data on the usefulness of RACATS reports (see app. I). We distributed a GAO standard user satisfaction questionnaire to RACATS users in the central office and the four regional offices included in the review. Questionnaires were given to users in PBS's Office of Design and Construction, Office of Building Management, and Office of Program Support. Respondents included branch chiefs, project managers, and support staff. Questionnaire data was analyzed by mini-computer to help us determine satisfaction with RACATS's reliability, timeliness, and usefulness.

We did not attempt to audit the design of RACATS, but did do enough work to obtain an understanding of how the system functioned--from initial input of source document information through final distribution and use of the reports generated by the system.

During our review we

--determined GSA's compliance with both internal and external policies, procedures, and guidelines on automated data processing (ADP) management, such as the Office of Management and Budget circulars and the National Bureau of Standards Federal Information Processing Standards (FIPS);

--interviewed agency personnel, including users, potential users, data processing personnel, and regional system coordinators;

--reviewed agency documentation, including system documentation files, input preparation instructions, user manuals, and other guidance; and

--inspected and analyzed agency records, including comparing input documents with output reports.

It became apparent during the review that some of the problems we were identifying were created by factors within GSA, such as GSA's ADP management. Therefore, we reviewed recent GAO and GSA Office of Audits reports and work in process relating to ADP management. We also believed that the Paperwork Reduction Act of 1980 would have a direct impact on how an agency managed its ADP and other information resources and could be a useful tool for solving some of the problems. We, therefore, evaluated the actions taken by GSA to implement the act and how these actions could benefit PBS and RACATS.

In evaluating the usefulness of the system, we used the following general criteria which experts in this field use to evaluate information systems:

--Effective construction information systems provide the necessary information for optimum decisions by managers.

--Effective systems provide information in a complete and meaningful manner.

--Finally, effective systems provide both operational managers and oversight officials with a common tool, using the same information, to carry out their individual management and control functions.

In addition, we used Construction Management: Principles and Practices by Stanley Goldhaber, and others, which provides the following more specific criteria on what an information system must do:

--Track actual performance related to time, cost, and performance during the entire life cycle of the project and to provide, in a simple and understandable form, variances from the planned and identifiable control parameters. The information must be predictive rather than historical.

--Provide specific information needed by individual managers in an organized and concise manner, rather than a maze of data.

--Provide exception reports requiring the manager's immediate attention.

CHAPTER 2

RACATS DOES NOT PROVIDE THE CAPABILITY AND

RELIABILITY NEEDED FOR EFFECTIVE OVERSIGHT

RACATS is not effective as a management oversight tool. It cannot provide complete and meaningful information on project performance because it was not designed to collect and analyze data which would show how actual progress and costs compare to planned progress and costs. Such information must, therefore, be developed manually and this is cumbersome, untimely, and costly. Also, the system does not produce reliable reports due to inaccurate and outdated information contained in its data base. Finally, PBS officials have not made a firm commitment to using RACATS; consequently, there is a lack of management emphasis on correcting data deficiencies and errors.

We also found that (1) the required post-implementation system review/evaluation to determine whether the system was designed and functioning properly was never completed, (2) integrity and reliability of the system were not maintained because users did not follow applicable FIPS, and (3) supplemental systems were being developed which duplicate and compete with existing capabilities. Consequently, GSA is paying over a million dollars a year for a system that must be supplemented by substantial manual efforts to obtain needed building repair, alteration, and construction oversight information. Therefore, if GSA's construction and renovation programs were to increase substantially, as GSA anticipates if pending legislation passes, an automated system would be essential.

RACATS NOT DESIGNED TO PROVIDE COMPLETE
AND MEANINGFUL PROJECT INFORMATION

An effective information system must provide its information in a complete and meaningful manner. For construction and renovation projects, this means that project reporting should advise management of variances from expected progress or results. For example, the information system should be capable of providing, at a minimum

--project schedule status for costs and milestones, showing both planned and actual;

--significant changes in project scope; and

--authorized or approved changes in time and cost.

We evaluated RACATS in terms of the characteristics experts state effective systems should possess. (See p. 6.) RACATS does not measure up to these criteria because, among other things, it is not capable of providing complete and meaningful information on the status of approved prospectus projects (those projects requiring congressional approval).

RACATS cannot provide complete and meaningful project performance information because it was not designed to collect and analyze all the data necessary to report project variances. Comparisons of planned versus actual milestone dates on active projects are not possible because the system was designed to allow an actual date to replace its corresponding milestone date when the milestone has been accomplished. Also, actual costs are never recorded in RACATS; actual and final costs are recorded only in GSA's financial accounting system. (This is discussed further in ch. 3.) Further, only the latest entry--the original project scope or the latest version as revised by change orders-- is maintained in the system. Therefore, RACATS cannot provide a complete history of scope changes nor can it analyze scope changes.

What are the adverse effects of this design deficiency?

There are significant adverse effects resulting from the lack of complete project performance reporting capability. This deficiency directly affects the oversight ability of PBS, GSA, and the congressional committees in that they do not routinely receive accurate, meaningful information on variances between planned and actual project costs, scope, and schedule. Accordingly, the Subcommittee on Public Buildings and Grounds, House Committee on Public Works and Transportation, would like more complete and meaningful project performance information in order to more effectively monitor approved projects.

The information can be obtained upon request. However, it must be compiled manually. The effectiveness of oversight is limited and top management is forced to rely on the skill and competence of the individual project managers and to be totally dependent upon these managers to take timely actions, as appropriate, when problems surface. It should be remembered that "a good information system does not guarantee a project's success. It can only provide information in relation to established guide-posts and ensure that management will not be surprised when trouble occurs." 1/ Without a good information system, management increases the risk of warning signals of approaching problems passing unreported or unnoticed. Also, top management is generally forced to react to or explain problems after the fact and does not have the opportunity to take timely action to prevent or minimize approaching problems. It is apparent from GSA's past experiences that it has had problems taking timely actions on project problems. We previously reported 2/ that a variety of management control weaknesses have plagued GSA's construction

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1/Stanley Goldhaber, et. al., Construction Management: Principles and Practices, (New York: Wiley Interscience, 1977) p. 119.

2/"What Has GSA Done To Resolve Previously Reported Problems In Its Construction Program?" (PLRD-81-7, March 27, 1981).

program, including increased costs and project delays caused by slow and untimely actions by GSA officials.

The second effect is on PBS's ability to objectively evaluate its performance in executing the approved construction and repair and alterations programs and the performance of its individual project managers on specific projects. Information on variances between planned and actual performances is a valuable tool for performance evaluation. The ability to meet established target dates and to complete projects within approved funding without significantly reducing project scope is a valid measure of performance. RACATS does not have the capability to provide PBS with the needed information for these evaluations. For example, PBS cannot determine, using RACATS, how long it takes to award the design contract after a project is approved. Also, because RACATS does not provide PBS with historical data on this activity, PBS has no historical standard on which to evaluate performance.

Untimely manual efforts must be used for project status reporting

Since RACATS is not capable of providing needed project status information, PBS and GSA must rely on manual methods which are cumbersome and untimely, reducing the value of the information for oversight purposes.

Office of Design and Construction

Within PBS, the Office of Design and Construction has responsibility for the oversight of all projects requiring design and construction activities or services. The office produces a status report for PBS on all major projects, giving a statement of the project's scope, its schedule status, and the latest cost estimate as of the date of publication. The information contained in the report is only partially obtained from RACATS. The cost and scope information are obtained manually from financial system reports and project files. While the report is supposed to be prepared semiannually, according to PBS officials, it is given a low priority and is not always prepared on time. For example, when we asked for a copy of the latest report in June 1981, the PBS official responsible for preparing the report said it had not been prepared since September 1980 because of the manual effort required to pull it together. As of December 17, 1981, the report still had not been prepared. However, the Office of Design and Construction can still evaluate the status of major construction efforts without the report, but does so only on an as needed or exception basis when higher level inquiries are received by PBS.

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Administrator's Office

An official in the Administrator's office told us that
the Administrator wants timely construction project information.
All construction information is supposed to be submitted monthly
by PBS; however, we were told that the information is frequently
not submitted on time and is only summary information, not the
project-by-project information the Administrator desires. The
reports are not submitted in a timely basis due to the extensive
manual effort required to gather the information from RACATS
reports, verify and correct the information as needed, and format
the information before submitting it. This manual processing
does eliminate erroneous information but does not ensure timeli-
ness or meet the Administrator's desires.

According to an analyst on the Administrator's staff, the
lack of timely, meaningful performance data precludes the Adminis-
trator from taking timely action to avoid problems on major
projects. Currently, the Administrator often is not aware of
problems until customer agencies complain or critical articles
appear in the press. This environment is totally inefficient
as problems cannot be anticipated and avoided, instead they must
be dealt with after the damage has already been done.

Congressional reporting is also
a manual effort

Under the Public Buildings Act of 1959, the Administrator of
General Services is required to provide an annual report to the
Congress on the status of major construction and renovation
projects which have been approved in the current and prior years.
We found that this report is the only complete compilation of
active prospectus projects prepared by GSA. We examined the last
three annual reports and found that the reported statistics were
not based on any RACATS-generated data and that the reports were
not timely enough for congressional users. The 1980 report was
issued in April 1981, the 1979 report in May 1980, and the 1978
report in September 1979.

The PBS managers responsible for compiling and issuing the
annual report told us that the sources of the information reported
were project files and telephone conversations with the regional
project managers, even though the reported information should be
available in RACATS.

Staff of the House Committee on Public Works and Transporta-
tion told us that when the annual reports are not received within
a reasonable period after the close of the year, the Congress is
unable to evaluate progress on approved projects and identify cost
overruns and project delays. Also, reports which are 4 to 9
months old when received are of little value to the Congress as
oversight tools. The PBS officials responsible for preparing
the annual status reports told us they cannot prepare the reports
more quickly because of the manual efforts involved, the burden of
their overall workload, and limitations on administrative support.

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Graphics capability could improve
system performance

RACATS does not currently have the capability to rapidly convert data into management reports that are easily interpreted and useful to top management. Consequently, PBS officials spend a great deal of time converting RACATS data into the format desired by top management. Computer graphics capability would permit management reports to be produced rapidly in a useful, more effective format.

Computer graphics has been defined as the portion of the digital processing of information which has as its central concern the display of information. This increasingly sophisticated technology allows the manipulation and display, on special viewing screens or plotting paper, of various forms, colors, lines, and shadings, and dimensional representations as well as words and figures. With the advent of coupling computer and communications technologies, it is now possible to provide graphics at points far distant from stored data.

The use of computer graphics by management personnel is expected to grow faster than any other segment of the graphics industry in the 1980s. Management interest in such systems may be divided into three categories: (1) program performance review, (2) decisionmaking, and (3) project monitoring. Effectiveness and efficiency of agency operations can be improved through the use of computer graphics by reducing paperwork and by quickly measuring and evaluating organizational performance. For example, reports to the Administrator are gathered from a variety of RACATS reports and manual efforts. This is a time-consuming effort. Computer graphics could provide a timely report and could aid in reviewing the results because charts can often make complex relationships much clearer than figures or words.

Measuring the cost benefit derived from the use of computer graphics is not easy due to the numerous variables which should be considered. The costs of purchasing one of the available graphics systems range widely from relatively low ($2,000) for one of the simpler microcomputer-based systems to moderately high ($60,000) for one of the more sophisticated stand-alone minicomputer-based systems. These costs, however, continue to decline. Further, system capabilities and operating costs vary widely.

Graphics packages capable of providing a more effective, less costly alternative to GSA's current practices are available. We did not make a comprehensive cost-benefit analysis of available graphics systems because GSA officials agreed that there was potential for improving productivity and effectiveness through the use of computer graphics. It is widely recognized that computer graphics will unequivocally improve productivity if it is used properly and the right system has been acquired for the intended use.

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GSA is currently undergoing a significant reduction in staff as a result of budget cuts. Consequently, improving the use of staff resources is a high priority item. For the equivalent of about one staff year of labor cost, GSA could acquire a graphics system which could provide needed information more quickly in the right format to the right audience and which could allow the staff currently preparing management reports to devote more time to higher priority, more productive work.

Before acquiring a specific graphics system, GSA should conduct a cost-benefit analysis to assure itself that the selected system will be cost effective for the intended use.

FIRM COMMITMENT TO USE RACATS HAS NOT BEEN MADE

PBS has not made a firm commitment to the use of the system, nor has it corrected the data deficiencies. We believe PBS's failure to make a firm commitment to RACATS is the underlying cause of many of the problems. Because of the lack of commitment, regions are lax in ensuring timely, accurate reporting. This has adversely affected the accuracy and reliability of the system and casts suspicion on the system. This mistrust of RACATS has led users to cite its unreliability and untimeliness as reasons for not using it.

Use of RACATS not required

Managers are not required to use RACATS, and as a result, some capabilities of the system are not used. For example, RACATS was originally designed to track a prospectus project through its entire life cycle, from inception through completion. This feature is not used, nor is the ability of the system to track a project through the prospectus approval process. The reasons given for not using these system features are

- --project managers concentrate on the individual subprojects rather than the whole project and

- --the effort required to input necessary data to fully track projects is too labor intensive and time consuming.

Regions do not adequately support the system

PBS's lack of commitment to RACATS manifests itself in its regions not adequately supporting the system. The regions question the usefulness of the system and fail to ensure that data is inputted accurately and in a timely manner. This adversely affects the central office's ability to maintain control and oversight over projects.

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RACATS change order information
often inaccurate

Inaccurate recording of change order data in the system is a problem which has been previously reported by GSA's internal auditors. In 1979 GSA's Office of Audits stated in its report 1/ that although change orders were recorded accurately in the GSA financial accounting system, RACATS contained errors, some $7 million in change order errors on one project. Since a large portion of GSA's work is contracted out, change orders represent a significant part of monitoring repairs and alterations and construction projects.

Our tests showed that change orders were not entered into RACATS accurately or were not entered at all. For example, two of the eight Region 6 (Kansas City) projects we tested had change order value errors in excess of $25,000. In addition, on these same eight projects, three time extensions authorized by change orders had not been entered into the system, causing project completion dates to be reported inaccurately. In addition, at the National Capital Region, we reviewed 26 percent of the prospectus projects (12 of 46 projects) and found 491 change orders on these projects valued at nearly $3 million. Of the 491 change orders, nearly 10 percent (45) had never been entered into the system and about 16 percent (70) had been entered incorrectly. Also, RACATS understated 58 change orders by about $1.4 million and overstated 12 by about $730,000. Since the errors occurred on separate change orders, the understatements did not offset the overstatements. Therefore, the total errors represented about 70 percent of the $3 million reviewed.

The PBS's Construction Management Division monitors construction projects. A responsible division official stated that contract change orders are monitored because they can affect a project's time, value, and scope. Due to the change order errors, RACATS's is inaccurate in these major areas. This can strongly affect RACATS's usefulness for tracking the status of projects, planning for additional work, and determining expenditures. Extensive manual efforts are used to verify system data.

Control of construction and renovation
activities adversely affected

Central office managers in both the Repair and Alterations Division and the Office of Design and Construction depend on regional support of RACATS to assure comprehensive control of construction and renovation activities. In the absence of this support, central office managers either do not perform certain functions or resort to other means to collect needed information. For example, the Repair and Alterations Division uses a monthly

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1/"Management Controls Over New Construction Change Orders." (74-6062-033, April 27, 1979).

RACATS report to control allotments to projects and to monitor progress. However, reporting is limited to individual work items on renovation projects. Consequently, relating a work item to a specific prospectus requires a manual search effort. Further, regions regard the report as an administrative burden, not as a management tool, because of the unnecessary manual effort it requires.

In another case, an official in the Design Management Division told us he was unable to produce a consistent, timely, and comprehensive nationwide analysis of projects in the design phase, as required, because of the varying reliability of milestone dates input by the regions. For example, Kansas City regional design management officials said they do not support the milestone dates input because they believe the simple manual card and file records are sufficient for their needs. Although the simplified records may meet Kansas City's need, the status of its design work is isolated from central office overview and the only means to pass this data on is by additional manual efforts.

In still another case, construction managers in the Boston region rely on planned contract award time frames to plan workloads for project managers. The Boston region's Contract Division does not maintain required contract phase milestone dates in RACATS because, according to a division official, it is less time consuming, simpler, and more reliable to keep this information on manual file card records. Consequently, construction management must continually follow up with division officials for status of contracts. Construction management officials consider this unreasonable. This again isolates the central office from the oversight process.

PBS managers do not rely on RACATS for information

Of the users responding to our questionnaire, 62 percent indicated they could not perform effectively without RACATS and 38 percent generally believed RACATS did not adequately fulfill their needs. In summary, users suggested that the system should provide more information to reduce cumbersome manual efforts and increase program efficiency. For example, suggestions included "expand reporting capabilities" and "improve data input" to enhance timeliness and accuracy.

We found the following additional examples where manual efforts were used to obtain needed information:

--In Region I (Boston) the Contracts Division does not use any RACATS reports to monitor contract awards and status because the information is outdated, inaccurate, and not in the needed format. Instead, the Branch Chief uses a manual project control card that provides more timely and appropriate information for his needs.

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--Regional PBS managers do not use RACATS prospectus status
reports because the information is untimely and inaccurate.
Other computer-generated reports are used and supplemented
with current information from correspondence files and
through telephone discussions with PBS central office.

--Regional officers maintain manual architect/engineer con-
tract status reports because the RACATS data base does not
have enough elements to track contract milestone events.

OTHER FACTORS CONTRIBUTING
TO SYSTEM INEFFECTIVENESS

We identified three additional factors which adversely affect
effectiveness of RACATS as an oversight and management tool. They
include the required audit or evaluation of RACATS has never been
made, users do not follow applicable FIPS guidance, and supple-
mental systems are being developed which duplicate and compete
with existing RACATS capabilities.

Post-implementation system review
of RACATS has not been made

Although RACATS has been in operation since 1978, PBS has not
made a post-implementation system review to assure itself that the
system does what it is supposed to do. According to GAO's guidance,
"Evaluating Internal Controls in Computer Based Systems - Audit
Guides," a post-implementation audit/evaluation should be made with-
in 1 year after system installation to ensure that system objectives
have been met. PBS officials indicated that such an evaluation had
not been made because of the need to evaluate other data systems.
The evaluation was scheduled for the last quarter of fiscal year
1981. However, due to budget cuts in travel funds, it was not done.

Enforcement of Federal standards
and guidelines is essential

Because RACATS information is not timely, accurate, or in the
format needed, many regional PBS managers develop or use nonstandard
reports to assist them in fulfilling their responsibilities. How-
ever, they are doing so without obtaining top PBS management's
authorization. FIPS Publication 31, "Guidelines for Automatic Data
Processing Physical Security and Risk Management," describes program
change controls as measures to assure management that computer pro-
grams are not intentionally or unintentionally modified without
proper authorization and to ensure that the integrity and reliability
of the computer system are maintained. PBS management's lack of
control over program development can result in mismanagement and
inappropriate use of limited ADP resources.

Further, such programs are not being documented. According
to FIPS Publication 38, "Guidelines for Documentation of Computer
Programs and Automated Data Systems," documentation for computer

programs is intended "to maximize the return on this investment and to provide for cost-effective operation, revision and maintenance." As a result of not documenting programs, duplicate efforts could exist, and other potential RACATS users are not aware of newly developed software that could possibly serve a common need. It is only through implementing uniform procedures, such as FIPS publications, throughout GSA that adequate management control can be assured.

Supplemental systems being developed

To compensate for RACATS shortfalls in meeting the original objectives, some GSA organizations have developed systems for their own needs. For example, PBS's facility plan is supported by an information system that is totally independent from RACATS, yet contains much of the same information, such as cost estimates, for prospectus projects and project descriptions. Also, a PBS central office user has developed a prospectus tracking system which will be used to monitor project approvals through House and Senate Oversight Committees. Finally, the National Capital Region Contracts Office has developed an information system for contract information. Although officials explain that this contract system will eventually interface with RACATS, there are presently no plans for the planning and tracking systems to do so.

IS THERE A NEED FOR RACATS?

In view of shortcomings in RACATS, does PBS really need the system? Could the money spent on it be more wisely spent in other places? We believe that there is a continuing need for RACATS or a similar information system and that it would be cost effective to improve and enhance the system's capabilities or to acquire a new system capable of fulfilling PBS's needs. The design objective used to develop RACATS is still valid. What the system needs is to have a few design deficiencies corrected, better input and data analysis capabilities, and improved input support at the regional level.

Although RACATS retains a wealth of information, managers do not use it to its best capacity. It requires substantial manual effort to support system capabilities and to compensate for its weaknesses. GSA, as are most agencies, will be making significant reductions in its work force during fiscal year 1982. Consequently, it is likely that managers will be expected to accomplish more with fewer resources. While GSA will be making significant reductions in staff, it may also be making substantial increases in its construction activities in the coming years. For example, GSA plans an ambitious construction program for the 1980s, adding some 15.6 million square feet of space to its inventory and spending an estimated $2.5 billion on construction and renovation, as shown on the following page.

Fiscal year	Amount
	(millions)
1982	$ 69.9
1983	68.4
1984	315.8
1985	352.0
1986	411.1
1987	569.6
1988	719.7
Total	$2,506.5

Therefore, an effective information system that reduces human efforts while providing comprehensive, accurate, and timely data will become particularly beneficial to management.

CONCLUSIONS

RACATS, as currently operated, is an inadequate management tool. Inaccurate information and general user distrust of the system prompt users to rely on manual records in lieu of RACATS reports. Because automated project information is not complete and accurate, timely project reporting to top management and congressional committees is impossible.

Management controls over RACATS use, program development, and documentation by users need improvement to ensure effective and efficient use of computer resources. Current controls are insufficient to protect against processing errors and misuse of data. Information resources management is weak with no firm management commitment to RACATS use or assurances that the system functions properly.

In view of the fact that the computer services contract, which covers the operation of RACATS, expires in March 1983, coupled with the significant increases in construction activity, we believe PBS and GSA need to evaluate RACATS as required and determine whether (1) the system should be redesigned to collect and analyze all the data necessary to provide complete and meaning-ful project performance information or (2) PBS should discontinue using the system and acquire an existing system which would fulfill PBS's needs.

RECOMMENDATIONS

We recommend that the Administrator of General Services

--conduct a post-implementation system review of RACATS to determine whether it should be redesigned to collect and analyze all the data necessary to provide complete project performance information or whether a more suit-able existing system should be acquired;

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--require that the Commissioner of Public Buildings Service enforce adherence to FIPS by user organizations;

--require that regions document all nonstandard RACATS programs fully and the that regions submit this documentation to the central office where it will be kept on file for control purposes;

--require that a full and complete inventory be made of all nonstandard programs and that a listing of all available programs be disseminated to the regions;

--acquire computer graphics capability which is cost effective to eliminate extensive, manual efforts expended in preparing management reports; and

--correct the input error problem through training, and possibly by acquiring better input devices, such as optical readers or other new input technology.

We also recommend that, based on the results of the post-implementation review and any new system's requirements, the Commissioner of the Public Buildings Service and the designated information resources manager of GSA

--correct and improve RACATS so that it adequately fulfills the current needs of the agency, or acquire another existing system which will fulfill its needs;

--require PBS managers to use whichever system is ultimately selected for agency use; and

--enforce the timely input of required data into the selected system.

AGENCY COMMENTS

GSA concurred fully with our findings and conclusions and agreed to take appropriate steps to implement our recommendations. GSA acknowledges that it is imperative that an effective GSA oversight mechanism be implemented to respond to the needs of PBS and provide project status information needed by the Administrator of General Services and congressional committees. Further, GSA believed that the basic premises for RACATS were still sound, although the system suffers from old age. Graphics, distributed processing, sophisticated data base software, modern interfacing, and other new techniques all require modern hardware and software.

GSA agreed that RACATS needs three active partners--ADP, a regional field user who enters data correctly and on time, and a management that values the proper input and the output's results. It also acknowledged that should any of the partners fail, the beneficial value of the system is greatly diminished, if not destroyed.

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CHAPTER 3

IMPROVEMENTS IN GSA'S INFORMATION RESOURCES

MANAGEMENT ARE NECESSARY TO RESOLVE SOME

EFFICIENCY PROBLEMS

Recognizing that many of the problems we identified in
RACATS could indicate that other GSA management information sys-
tems were not effective, we looked at other management informa-
tion reports and evaluations of GSA activities. These other
reports showed that there are significant weaknesses in GSA's
management of information and information resources. Therefore,
unless actions are taken to correct the underlying problems,
steps taken to correct RACATS deficiencies would be only margin-
ally effective.

Weak coordination among major elements within GSA and weak
internal data and management systems throughout GSA were identi-
fied in a December 1980 National Academy of Public Administration
(NAPA) report as 2 of 25 serious problems that required GSA man-
agement's attention. It also emphasized the importance of com-
puter usage in GSA's future, suggesting that management and
operational changes would facilitate better performance of GSA
objectives. The NAPA report recommended, among other things,
that the Administrator of General Services should undertake
to "install sound, up-to-date management control and information
systems" and "pursue energetically higher standards to vocational
competence and professionalism among its employees, especially
through training." Also, weaknesses in ADP management have
been reported by GAO and by the GSA Inspector General.

We saw the effects of the above agencywide problems on
the effectiveness of RACATS. Interface problems between PBS's
RACATS and GSA's financial accounting system need to be resolved
to improve the economy, efficiency, and effectiveness of RACATS
as an oversight tool. Due to the nature of the underlying
problems, PBS cannot unilaterally resolve all of the deficiencies
in RACATS--it needs to have top GSA management's support and
active participation. Until the Paperwork Reduction Act of 1980
mandated the appointment of an information resources manager
for July 1981, GSA had not established a forum or referee to
resolve conflicts among the managers of the various ADP resources
within GSA or to enforce FIPS.

We believe that the Paperwork Reduction Act, if effectively
implemented, will materially improve not only PBS's RACATS, but
GSA's overall information resources management (IRM). The act
requires GSA to designate a senior official, reporting to the
Administrator, with authority and responsibility for ensuring the
effective and efficient management of ADP and other information
resources. This senior official must not be burdened with duties

unrelated to IRM and should be supported with a strong organizational structure. The official will also need to develop an IRM program that sets out the plans, policies, and priorities whereby the Administrator of General Services will establish agency direction.

A strong organizational structure was not in place at the time we conducted our fieldwork at GSA. However, GSA is now in the process of developing such an IRM structure which should provide the necessary policies, planning, control, direction, and accountability GSA has so badly needed. GSA has already restruc- tured its organization at the regional office level to reflect conceptually the establishment of an agencywide IRM structure.

WHAT IS INFORMATION RESOURCES MANAGEMENT?

IRM is a concept which is difficult to define in terms accept- able to everyone. The word "information" means different things to many people. Nevertheless, in the simplest terms, IRM means some form of management that is aimed at information and its handling. In the Paperwork Reduction Act of 1980, the Congress has established Governmentwide IRM policy. The act states that the purpose of the policy on coordination of Federal information is, among other things:

> "* * * to ensure that automatic data processing and
> telecommunications technologies are acquired and used
> by the Federal Government in a manner which improves
> services delivery and program management, increases
> productivity, reduces waste and fraud, and, wherever
> practical and appropriate, reduces the information
> processing burden for the Federal Government * * *."

NAPA FINDS INFORMATION
MANAGEMENT PROBLEMS

During 1980 the Administrator of General Services requested NAPA to conduct a careful appraisal of the future of GSA, spe- cifically dealing with some fundamental questions regarding the proper role of GSA within the total framework of the Federal Government. NAPA's report, issued December 31, 1980, evaluates GSA's entire operation; identifies the root causes of its troubles, whether organizational or managerial; and proposes measures to assure an effective performance. It also identified some 25 major problems and problem areas besetting GSA.

Information management is discussed in various degrees throughout the report. Three of the problem areas discussed re- lating to matters are

--GSA's lag on ADP and other technologies as demonstrated particularly in information and telecommunications systems,

--weak coordination between major elements, and

--weak internal data and management information systems.

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NAPA criticized GSA's management of ADP resources. It stated that:

"GSA's internal usage of computer systems for management purposes has not inspired confidence in the ability of the agency to provide adequate assistance to others. There is little doubt the * * * major GSA functions such as supply management could be vastly improved with the development and implementation of automated systems for supply management which reflect the current state-of-the-art."

It also stated that:

"Frequently, the computers used in GSA operations are themselves old and technologically obsolescent. This contributes to the difficulty in obtaining higher skilled professionals, who generally prefer to work with the most modern and up-to-date hardware available."

The NAPA report emphasizes the role computers should have in GSA's future and the importance of GSA's developing internally the institutional capability to take advantage of the advances being made in this technology. The report stated:

"Many of the changes predicted for the coming years are made possible by the revolution which has taken place in the field of information processing and communications. Changes in computer technology are giving rise to a vast array of new products and services that will make many present-day devices obsolete or at least position them far lower on the product priority scale."

NAPA stated that substantial organizational and managerial changes will be required. The expanded availability of computers will challenge managers in selecting and installing new systems. Further, care will be required in designing and acquiring new systems to insure that the informational needs of users are met. RACATS currently does not do this as discussed in chapter 2. NAPA indicated that a major pitfall has been the tendency to merely transfer manual information procedures to the computer as they exist without taking advantage of the unique capabilities built into the computer. The adverse effect of this is the risk of lower productivity by maintaining inefficient and often un-necessary procedures indefinitely.

NAPA concluded that:

"It is now widely accepted that some comprehensive approach to information management should be adopted. * * * Increasing integration of the ADP and telecommunications technologies are almost certain. * * * More extensive and more informed usage of these new technologies offers one promising route for improving performance without increasing costs. Con-siderable effort and attention need to be directed to exam-ining and eliminating existing barriers to progress in this area * * *."

Of the 11 recommendations made in the NAPA report, 3 were related to IRM. These recommendations were

--install sound, up-to-date management control and information systems;

--pursue energetically higher standards of vocational competence and professionalism among its employees, especially through training; and

--institute systematic long-range planning at several levels, both in the central office and in the regions, ensuring its integration into current decisionmaking.

GSA actions

Corrective efforts are underway to address the problems identified in the NAPA report. For example, the current GSA management recognizes that the agency has a lack of managers at the higher levels and has attempted to bring in managers from private industry and move current managers into positions where they will be more effective. Also, GSA has set up a Management Improvement Office to provide a structure to

--review priority GSA problem areas,

--propose and monitor immediate corrective actions,

--identify and implement institutional changes, and

--review and coordinate proposed policy changes.

The Management Improvement Office is composed of internal GSA analysts, GSA technical experts (detailed from services and staffs, as required), and private sector technical support (Executive Loan Program). Through the Executive Loan Program, GSA is attempting to get a private sector perspective on specific GSA problems. Some of the projects that have been initiated or are planned for the program are

--an ADP personnel resources evaluation,

--technological alternatives for records storage and retrieval,

--construction cost control practices,

--a management information system for the Administrator's needs, and

--a space utilization management evaluation.

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ADP management problems, as clearly shown in the NAPA report, are not peculiar to PBS, but permeate the entire agency. In July 1981 we reported 1/ that GSA's ADP management was inadequate. In our report, we stated that:

> "The lack of internal ADP management expertise has been a prime factor in GSA's inability to acquire needed ADP resources to support its internal systems. For example, current internal ADP management (1) could not develop a good RFP [request for proposal] for the long-range acquisition [of ADP services], (2) did not follow Federal ADP policy and regulations, and (3) bypassed the views of its to management council in making a key acquisition decision. We believe these shortcomings led to poorly proposed solutions to GSA's problems and poor solutions have compounded the problem."

Since May 1979, GSA's Inspector General has issued 17 reports discussing ADP management problems within GSA and currently has 14 active reviews of ADP activities. The reports discuss numerous problems similar to our RACATS findings and they also support the findings of the NAPA report. For example, the Inspector General reported 2/ the existence of interface problems between the Federal Supply Service's inventory system and GSA's financial accounting system, as well as several other problems. The Inspector General concluded that these conditions existed because the Federal Supply Service and the Office of Finance

> " * * * did not coordinate the development and implementation of internal controls that jointly affect their operations. Within GSA there are over 100 employees that can defraud the General Supply Fund if the control weaknesses are exploited. In addition, some of the weaknesses can be exploited by individuals outside of GSA."

Also, in its report 3/ on the development of the National Audiovisual Center Distribution/Information System, the Office of the Inspector General reported that

> --ADP organizational weaknesses contributed to an excessive 3-year development period,

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1/"Fragmented Management Hinders GSA's Ability to Acquire Internal ADP Resources" (AFMD-81-74, July 28, 1981).

2/"Significant Internal Control Weaknesses Can Cause Losses to the General Supply Fund" (5D-00154-06-06, October 20, 1980).

3/"Report of Audit Participation in Systems Development of NARS-7, National Auditovisual Center Distribution/Information System-Phase 1" (5F-00086-00-22, May 8, 1981).

--financial and operational system interface controls were
weak to the extent that fraud in the amount of $100,000
was committed and adequate action had not been taken to
strengthen the financial controls,

--inefficient customer order processing had an adverse ef-
fect on operations and reinforced the public's negative
opinion on Government-administered operations, and

--poor planning had led to underutilization of a $200,000
computer system which had been paid for but remained un-
tested in shipping cartons while its warranty expired.

Underlying all of these problems was the absence of a strong
central manager/referee in charge of making decisions and coordi-
nating efforts of unrelated organizations.

GSA actions

GSA has taken steps to address the issues raised in these
audit reports. GSA advised us that it has set up a strong audit
followup organization to assure solution of problems identified
through the audit process. In addition, it has established
projects specifically to correct certain problems mentioned
above. For example, a task force has been formed to look into
the customer order processing problem, and a master planning
capability is being developed to improve ADP systems' procurement.

INTERFACE PROBLEMS BETWEEN
AUTOMATED SYSTEMS REMAIN UNRESOLVED

During our review, we observed some of the effects of agency-
wide problems reported in the NAPA report as they affect RACATS.
Weak coordination and ineffective ADP management appear to have
resulted in a lack of action to resolve longstanding system inter-
face problems between PBS's RACATS and GSA's financial accounting
system.

RACATS and accounting systems' interface
problems remain unresolved

As early as 1975, interface problems between PBS' construc-
tion and repair and alterations information systems and GSA's
financial accounting system have been recognized as limiting
efficiency and effectiveness. However, GSA has taken no steps
to effectively resolve the problems and to establish an automated
interface. The merger of data is still completed manually.

Duplicate entry of data source documents

Some information that is available in the RACATS data base
is not being used by the accounting system. Instead, this infor-
mation is entered into the accounting system from source docu-
ments. For example, the standard contract change order form is

the source document for updating the contract file in RACATS and for entering the same information into the accounting system. PBS officials believe this should be a one-time entry transaction originating in RACATS, the system of initial entry.

Cost data transferred manually

RACATS reports provide project information, such as control number, work item status, estimated costs, but do not report obligations. Obligations are identified and reported on GSA's National Electronic Accounting and Reporting System, a computerized financial accounting system. Currently, there is no automatic interface between these two systems. Therefore, to prevent overobligating and to determine the availability of funds before authorizing a new project, regional office branch chiefs must manually match RACATS and accounting system data to reconcile obligations to authorizations.

Also, RACATS produces a monthly construction support fund cost report which is provided to the Office of Finance. Finance manually enters these costs into the financial system. Due to the lack of an automated interface between these two systems, the opportunity to improve the efficiency and timeliness of reporting is lost. Further, the chance of error is increased each time the same information is reentered into or manually transferred from one data base to another.

The manual interface problems encountered with the accounting system and RACATS increase with the size of the region's workload. For example, at the National Capital Region, a full-time clerk was hired to track errors between the two systems. An automatic transfer between the systems would save personnel resources, time, and money. In addition, potential mistakes that might be made in entering the data a second time would be eliminated.

The need for cost data is essential to monitor budget resources and management planning

PBS regional managers periodically need to know the status of budgeted resources. At least weekly, they manually compare the accounting system's daily transactions reports to their source documents to ensure that all transactions are recorded. Another manual comparison of the latest accounting monthly report and the subsequent daily accounting reports is made to calculate the current budget balance. This procedure is not only cumbersome, but is inefficient because the correct balance is established only weekly. One central office official indicated that in order to fully evaluate prospectus project cost, he had to rely on (1) RACATS reports for the project's estimated cost, (2) accounting system reports for the project's cost data, and (3) manual allotment documents to verify both systems' sources.

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The lack of interface also reduces the effectiveness of RACATS for management planning. RACATS project status has to be manually merged with budget plans and project funds in the accounting system before managers can begin forecasting project plans.

No actions taken to resolve problems

In our July 1979, report 1/ we recognized that an automatic interface between the two systems would be more efficient and economical. While GSA officials agreed more effective use of the two information systems could be made, no action was taken.

We found that the interface problem in moving data between PBS's RACATS and GSA's financial accounting system actually pre-dates RACATS. In a 1975 analysis of the then-existing PBS information systems for construction and repair and alterations (see p. 2), the consultant stated that the most significant problem was the interface one. Nevertheless, this problem was not resolved in the design of RACATS and has not been subsequently corrected. PBS and financial management officials have been unable to agree on steps to resolve the interface problem. The merger of data between the two systems is still handled manually. As a result of this inefficiency, PBS is unable to manage and use its resources efficiently and economically. One of the problems is that the financial accounting system is under the direct management control of the Assistant Administrator for Plans, Programs, and Financial Management, who is also the individual responsible for managing GSA's ADP resources. RACATS, on the other hand, is under the management control of the Commissioner of PBS.

OVERALL ADP MANAGEMENT COULD BE
POSITIONED MORE EFFECTIVELY

GSA has positioned its ADP management authority under the Assistant Administrator for Plans, Programs, and Financial Management according to longstanding, yet now outdated practice. Further, the decentralization of some ADP management functions, such as computer program maintenance and revision, has aggravated an already inefficient management arrangement. This positioning of ADP management within the agency has hampered the effective, efficient, and economical use of available ADP resources and specifically the operation of RACATS. A stronger central management, positioned higher in the organization, could ensure that limited ADP resources are used prudently and equitably.

1/"The General Services Administration Should Improve The Management of Its Alterations and Major Repairs Program." (LCD-79-310, July 17, 1979).

Outdated ADP organization
creates fragmented management

The arrangement used by GSA to manage its ADP resources, while now outdated, was once common practice. Historically, information management has been a fragmented activity shared among the traditionally independent elements of an organization. Many critical data-handling activities, such as budgeting, accounting, and financial management, have been and are located in the administrative or financial management office. Automating these activities has traditionally resulted in placing management responsibilities for ADP services, including information systems, under the control of the office of administration or finance.

Since data-handling activities are not limited to adminis-trative and financial functions, information systems have fre-quently been developed to assist managers at other levels in an organization. These information systems often must compete with the budgeting, accounting, and financial management systems and related information systems for computer time and other ADP resources. This has resulted, in many instances, in a dispersed information management structure, such as the one that exists within GSA. For example, activities, such as information and library services, statistical functions, information programs, and associated activities (policy, reports, management, procure-ment, and communications), may not be centrally managed. Often responsibility for managing these activities and services is shared, and in some instances, the jurisdictional responsibility is not clear. As a result, information resources are poorly managed and inappropriately used. For example, the Office of Contracts, within PBS, is designing its own information system because RACATS and other existing systems are not providing it with needed data. It seems inappropriate and highly unlikely that a complete new system is really needed. Therefore, a more prudent approach would be to evaluate the existing systems and modify these to address the needs of the Office of Contracts.

We believe that the situation that exists within GSA is a classic example of this outdated mode of managing ADP resources. The Assistant Administrator for Plans, Programs, and Financial Management is responsible for managing and acquiring GSA's in-ternal ADP resources. Under the Assistant Administrator's con-trol, the Office of Data Systems is responsible for

--formulating and administering agencywide policy for acquiring and using computer resources;

--designing, developing, procuring, maintaining, and con-trolling all automated information systems that support GSA missions; and

--establishing and maintaining a long-range plan for satisfy-ing agencywide ADP requirements.

Currently each staff office, service (including PBS), and region provides computer system support and controls all maintenance and enhancements for internal automated information systems used to support their individual missions.

Centralized IRM needed

The inappropriate placement of ADP management and the out-dated structure of ADP functions have created some of the prob-lems we have identified in the operations of RACATS. For example, Federal standards and guidelines are disseminated throughout GSA by the Office of Data Systems. However, this office does not have sufficient authority to enforce the use of the standards and guidelines. As a result, necessary controls to make RACATS efficient and effective are lacking. ADP management needs to be elevated to a level where it can (1) effectively serve all ADP user activities associated with budget, procurement, policy, planning, and information-support services and (2) bring about democratic exchanges and sharing of responsibilities which pro-mote effective management of resources.

The idea of centralizing the IRM functions of an agency is not unprecedented. The Congressional Research Service, in its report, "Federal Information Management Policy: Critical Direc-tions" (81-101 SPR, June 1980, updated March 1981), cited as examples three agencies--Department of the Interior, Defense Intelligence Agency, and the Headquarters, Department of the Army--which have centralized their IRM functions and responsi-bilities.

Further, in 1979, the President's Federal Data Processing Reorganization Project recommended that each agency be required to establish an information resource manager as an assistant to the agency head. This individual would be accountable for the following actions leading to the efficient and effective use of information technology throughout the organization:

--Oversee the development and ongoing operation of the organization's information technology long-range planning mechanism and coordinate this planning with agency program planning.

--Encourage technological innovation in the provision of service delivery by the organization, within existing budgetary, technological, and organizational resource constraints.

--Monitor the delivery of services by the organization and advise the agency head on the best use of information technology to increase the efficiency of such services.

--Advise the agency head on areas in which the information technology can be used to increase the overall effective-ness and productivity of information processing activities in support of the organization.

In 1981 hearings before the House Committee on Appropriations, Subcommittee on Treasury-Postal Services and General Government, the Administrator of General Services acknowledged that the finance and other management information systems did not interface with one another either at the central office or region level. The Administrator further indicated that the Office of Data Systems was the focal point for solution of these problems. Also, in commenting on a prior report, 1/ the Administrator stated:

> "As competition for resources continue to grow, I fear that support activities will more and more frequently be underfunded, unless mechanisms are established that ensure proper determinations of agencies' priorities."

GSA has transferred the functions and personnel from the Office of Records and Information Management, National Archives and Records Service, to the office of the Office Information Systems, Automated Data and Telecommunications Service. We have not evaluated the effects of this reorganization but a change was predicated on the current Administrator's desire to consolidate GSA's Government-wide responsibilities for information management within GSA, while at the same time consolidating GSA's internal IRM functions.

EFFECTIVE IMPLEMENTATION OF THE PAPERWORK REDUCTION ACT CAN REMEDY MANY OF GSA'S ADP MANAGEMENT PROBLEMS

GSA management could benefit significantly by effectively implementing the Paperwork Reduction Act of 1980. The act requires each Federal agency to designate a "senior official" responsible for carrying out information activities, including ADP, in an efficient, effective, and economical manner. We believe that if this senior official and the supporting management structure are placed and organized effectively, and a meaningful management program is developed, GSA could materially improve its planning, control, direction, and accountability for IRM, and as a result, improve the effectiveness and efficiency of RACATS.

The Paperwork Reduction Act embodies IRM concept

In the last few years, an IRM concept has emerged as a focus of managing information activities. Although lacking a concise or universal definition, the IRM concept has become a framework for planning more responsive and coordinated information management organization structures throughout the Government and the private sector. In brief, IRM is viewed as an integration of

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1/"Federal Records Managment: A History of Neglect" (PLRD-81-2, February 24, 1981).

management responsibilities for the control of information-related activities and related processes. It includes the planning and management of information collection, use, and dissemination as well as the management of information technologies.

The current rationale for comprehensive management of information-related activities is that these activities contribute to an organization's effectiveness. According to the IRM concept, the IRM office should provide a central focus for all those information activities that support and serve the organization. Also, this office should reflect the organization's specific directions and goals and be consistent with good management practices. The objectives and goals of the IRM office should be formulated to provide a cohesive management framework consistent with the organization's requirements and values. The IRM policies and procedures should provide a foundation for developing the information architecture and relevant programs required by the organization.

The Paperwork Reduction Act provides that each agency head shall designate a senior official who will be responsible for ensuring agency compliance with Federal information policies, principles, standards, and guidelines. The official will also be responsible for ensuring that the agency carries out its information management activities efficiently, effectively, and economically. In addition, the official will be required to periodically review the agency's information management activities, including the planning, budgeting, organizing, directing, training, promoting, controlling, and other managerial activities involving the collection, use, and dissemination of information.

How can the Paperwork Reduction Act improve GSA's IRM?

We believe that effective implementation of the Paperwork Reduction Act can improve GSA's planning, control, direction, and accountability for IRM, PBS, as well as the total agency.

First, and most importantly, it will assign accountability by establishing a single individual in GSA with a clear mandate to carry out GSA's responsibilities under the act.

Second, the act emphasizes the importance of IRM by requiring that the senior official report to the head of the agency.

Third, the act emphasizes the need for top-level agency oversight and control to ensure that an agency efficiently, effectively, and economically uses its information resources and complies with information policies, principles, standards, and guidelines prescribed by the Office of Management and Budget.

Fourth, effectively implementing the act will require a good planning process. Good planning is a prerequisite to efficient and effective operations.

And fifth, the act provides clear direction by giving the senior official responsibility for all information activities through the entire process of collection, dissemination, and use.

The act provides guidance
on organizational structure

The Paperwork Reduction Act does not prescribe any specific organizational structure for Federal agencies in carrying out their responsibilities under the act. However, the act, along with its legislative history, does provide guidance to Federal agencies.

In addition to requiring that the designated senior official report directly to the agency head, the act sets out certain responsibilities for managing information resources that involve compliance and accountability, indicating that the senior official will need to exert substantial influence over the use of information resources and will need significant authority.

In House Report No. 96-835 accompanying the bill (H.R. 6410), the following statements on legislative intent were included:

"* * * it is also expected that certain restructuring of activities may be required within the agencies. The Committee expects that each agency will reorganize, to the extent necessary, so that the counterpart activities within the agency to those assigned to the OMB Office of Information Policy [later amended to Office of Information and Regulatory Affairs] will report directly to the senior official designated by the agency head. This realignment should provide for greater coordination among the agency's information activities as well as greater visibility within the agency."

*　　　　*　　　　*　　　　*　　　　*

"Under this legislation, the responsibility and accountability for the agency's information management activities is in that senior official designated by, and reporting directly to, the agency head under Section 3506(b) of proposed new chapter 35, Title 44, United States Code. A proposed structure for an agency will comply with the intent of H.R. 6410 provided that (a), the agency's information functions, which relate to the OMB Director's functions listed in Section 3504(b), are under the jurisdiction of the designated agency official and (b) the designated official has final approval authority over the agency's information functions. Subcomponents may be created under the

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designated agency official as necessary to reflect the
agency's operating needs, as long as such subcomponents
shall report directly to, and be under the direction of,
such official. This recognizes that one structure will
not be appropriate for all agencies."

Similar language is included in the Senate report 1/ accom-
panying Senate bill 1411.

The House report also includes language that constituent
agencies (such as PBS) in a Government department will be expected
to establish central information management units, as follows:

"The appropriate structure under H.R. 6410 is somewhat
different in the case of a Government department having
constituent agencies, such as the Department of Defense.
The Committee expects that each constituent agency will
establish a central information management unit, subject
to the review and approval of the department-level unit
headed by the designated senior official. The basic
reason for this organization is that a department has the
responsibility to consider its mission in a department
wide sense, whereas a constituent agency will generally
consider only its own mission. In some cases, an individ-
ual action may raise a conflict between a constituent
agency and its department. Consistent with the objectives
of this legislation and within statutory limits, the
constituent agency must conform its needs and interests
to those of the department."

How should GSA implement the
Paperwork Reduction Act?

Based on our review of RACATS and NAPA's overall review of
the GSA organization, we believe effective implementation of the
Paperwork Reduction Act at GSA would involve (1) designating as
the senior official a high-ranking official, other than the
Assistant Administrator for Plans, Programs, and Financial Manage-
ment, with full-time responsibility for IRM matters, (2) estab-
lishing a separate, independent office, and (3) developing and
implementing an IRM program. We specifically eliminated the
Assistant Administrator for Plans, Programs, and Financial Manage-
ment because this position has important financial, planning,
and other administrative responsibilities and given the com-
plexity of GSA's information management problems, we believe the
best altenrative is to select someone whose sole responsibility
is IRM.

The senior official will need to be a high-ranking official,
reporting directly to the Administrator, who can devote adequate
and continuous attention to carrying out the IRM activities for

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1/Senate Report No. 96-930 (96th Cong., 2nd session, Sept. 8,
  1980).

GSA's various services. While the act does not delineate the responsibilities of the official, these responsibilities may include providing policy oversight and guidance, program and budget planning; personnel management; automated and nonautomated information systems planning, development, and operation; and information support services. In addition, this official will be responsible for eliminating and preventing duplication within an agency's information systems and maintaining an inventory of major information systems. Problems exist in many of these areas within GSA, including PBS's tracking system. We believe top-level management and coordination of resources would substantially improve the effectiveness and efficiency of RACATS.

The Paperwork Reduction Act does not require Federal agencies to set up any specific organizational structure. Still, we believe that a separate office is necessary for a more responsive management approach. A separate office would allow GSA's information activities to be managed as an integrated process and for subcomponents to be under the senior official's direction as the act intended. GSA should establish, in each service and office, a central information management unit subject to the review and approval of the senior official. These units would be modeled after the senior official's office and would help advise the senior official on policy issues. However, it must be understood that the senior official is the one responsible for IRM activities. There will be times when the senior IRM official's views will conflict with the views held by GSA's assistant administrators and commissioners. The outcome of these conflicts could have serious consequences, given the critical importance of IRM policy. In our opinion, unless GSA's senior official is on the same level as the assistant administrators and commissioners, IRM matters will not receive the same consideration as program requirements.

The senior official will also need to develop an IRM program so that designated responsibilities can be carried out systematically in a logical, planned manner. The IRM program would include policies, standards, a comprehensive long-range plan, and goals and measurable objectives. Management from all services and offices must be included in the development of the program and should be included in the IRM organizational structure. Since a strong organizational structure is needed, we believe that the staff and functions of the Office of Data Systems should be transferred from the Office of Plans, Programs, and Financial Management to form the nucleus of the senior IRM official's staff in an office of information resources management.

Shortly after the current Administrator was confirmed by the Congress, he designated the Deputy Administrator as the interim senior official for IRM and outlined the responsibilities of this assignment. GSA recognizes that this appointment may not best serve the purposes of the act or Office of Management and Budget guidance, but the Administrator needed more time to select the right person for the position and to determine how the positon

would be integrated into the organization in order to be most effective. We were told that the Administrator did not intend that the Deputy Administrator would be the "working" executive in the area of IRM. The Associate Administrator for Policy and Management Systems was the defacto GSA executive assigned to this function. When the Administrator makes his permanent appointment, he should consider that the senior official must not be burdened with duties unrelated to IRM. This individual must be free to devote full time to IRM responsibilities and be positioned high in the organization if GSA's IRM problems are to be corrected. We encourage GSA to name its permanent senior official as soon as possible.

GSA actions

Subsequent to the completion of our fieldwork, GSA made changes to its organizational structure. On April 15, 1982, GSA reorganized its regional structure to include an Office of Information Resources Management. Briefly stated, this office is separated into divisions that are responsible for managing and coordinating the security and operations of information processing and services within GSA and Government-wide; telecommunications activities; Federal Information Centers, Federal Archives and Records Centers; and automated office information systems. In addition, the Associate Administrator for Policy and Management Systems has been and is currently working on proposed reorganizations for the central office. Several central office structures have been developed and presented to a GSA steering group made up of executives from private industry. These individuals are responsible for managing information in their respective corporations. To date, the steering group has provided feedback on the type of centralized IRM management which will best suit GSA's needs given its technological and management evolution.

GSA has met with and continues to meet with the Intergovernmental IRM Working Group. We were told that GSA is exchanging current data on how it will be structuring its IRM program.

CONCLUSIONS

The problems preventing an automated interface between RACATS and the financial accounting system must be resolved and such an interface established. We believe that unless steps are taken by GSA to strengthen its ADP management by enforcing FIPS and other ADP guidelines and to resolve the interface problems, there is little chance that RACATS can ever be effective as a management oversight tool.

The effective implementation of the Paperwork Reduction Act of 1980 can materially improve GSA's ADP management, and consequently, the effectiveness and efficiency of RACATS. During our review, the Administrator of General Services designed his Deputy Administrator as the senior official to carry out the responsibilities required by the act. Although we understand that this

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is only an interim appointment, we cannot overemphasize the importance of the senior official not being burdened with other activities and responsibilities. The designated senior official will have to have a substantial, personal, and daily involvement in the management of GSA's information resources.

The senior IRM official should not be just a title. The information resources manager will need to devote substantial attention to IRM, develop a meaningful program, and have a strong, responsive organizational support structure at his or her command to carry out his or her responsibilities under the act. We believe these steps are essential to improving GSA's management of information and information resources. Consolidating IRM under a single manager will not only strengthen management control, but will help to conserve GSA's limited personnel resources. We also believe that matters discussed in this report should be given a high priority by the information resources manager in view of the expiration of the time-sharing RACATS contract in March 1983. In conclusion, we would like to reiterate a cautionary note appearing in the NAPA report following its analysis of potential actions to correct identified problems. The note states that

"The correcting of the identified problems will not occur automatically, however, no matter how adequately the proposed programs cover the problems. It is the skill, energy, and persistence with which the plan is executed that will really count, more than the plan itself."

This statement is apropos for the matters discussed here; execution will be the key to successfully solving RACATS deficiencies and GSA's ADP management and IRM problems.

RECOMMENDATIONS

We recommend that the Administrator of General Services:

--Appoint a senior official experienced in information management as the permanent information resources manager, designated at assistant administrator or equivalent level, reporting directly to him, with the sole responsibilities of this official being to implement the Paperwork Reduction Act of 1980 and assume all the duties required by the act.

--Require top management's involvement and cooperation in IRM and emphasize the senior IRM official's authority over all GSA IRM activities.

--Establish a central IRM office, headed by the senior official, consolidating existing offices. This office should include such IRM-related subcomponents as deemed necessary for the senior official to carry out his/her responsibilities.

AGENCY COMMENTS

GSA agrees completely with our findings, conclusions, and recommendations. GSA advised us that subsequent to the completion of our fieldwork significant steps were taken to implement NAPA's recommendations and to establish an IRM structure within the agency. GSA stated that some actions have already been taken to implement our recommendations in this chapter, and further steps are planned. Alternative IRM organizational structures are being considered by a GSA steering group and a decision is expected in the near future. Also, specific individuals are being considered for IRM positions.

Additions to the report were made to show the steps GSA has taken since our fieldwork was completed.

USER SATISFACTION QUESTIONNAIRE--

COMPUTER-PROCESSED PRODUCTS

This questionnaire is designed to obtain the user's evaluation of computer-processed products. It includes questions on product format, sufficiency and accuracy of reported information, necessity for the product, and possibilities for product improvement. Since computer-processed data is ultimately generated for its users, responses to this questionnaire can be considered strong indicators of whether computer-processed products are reliable.

Product Identification:

1. Title _____

2. Data processing identification _____

3. Portion of product to be evaluated _____

   _____

   _____

4. Frequency of product _____

User Identification:

1. Name _____ Date _____

2. Title _____

3. Organization _____

4. Phone No./Address _____

5. Extent of your knowledge about product _____

   _____

   _____

User Evaluation of Product

1. For what purpose do you use the product?

   ___Initiate transactions   ___Other--Explain
   ___Authorize changes to the system
   ___Operate computer terminal
   ___Maintain data controls   _____
   ___Design/Program applications
                                                _____

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2. In relation to the work of your office or division, the
    product is:

Not important   Very
    at all   important

```
     /     /     /     /     /     /     /     /     /
____/_____/_____/_____/_____/_____/_____/_____/_____/_____
    1     2     3     4     5     6     7     8     9     10
```

3. The product's contents are:

    Very difficult   Very easy
    to understand   to understand

```
     /     /     /     /     /     /     /     /     /
____/_____/_____/_____/_____/_____/_____/_____/_____/_____
    1     2     3     4     5     6     7     8     9     10
```

Explain answers for questions 2 and 3 _____

_____

_____

4. Can the product be used as is without correction, further
    identification, or analysis?

    ___ Yes   ___ No

5. In your judgment, is the data:

    --Accurate and reliable?   ___ Yes   ___ No
    --Available when needed?   ___ Yes   ___ No
    --Current (v. outdated)?   ___ Yes   ___ No
    --Useful?   ___ Yes   ___ No
    --Understandable?   ___ Yes   ___ No

    For each "No" answer, please explain below and provide
    examples.

    _____

    _____

    _____

    _____

    _____

6. In your opinion, should the product

    --provide more data?   ___ Yes   ___ No
    --provide less data?   ___ Yes   ___ No
    --be combined with other products?   ___ Yes   ___ No

    (a) Is any part of the product
         obsolete?   ___ Yes   ___ No

    (b) Can it be improved to make
         your job easier?   ___ Yes   ___ No

    For each "Yes" answer, please explain below.

    _____

    _____

    _____

    _____

    _____

7. If you maintain manual records to supplement computer-
    processed information, briefly explain.

    _____

    _____

    _____

8. Does the product duplicate any other information you
    receive?

    ___ Yes   ___ No

    Explain _____

    _____

9. Can you readily obtain, from other sources, the information
    contained in the product?

    ___ Yes   Souces(s) _____

    ___ No   _____

10. Do you supply the raw data (input) for this product?

___ Yes   ___ No

11. Do you check this product for quality when you receive it
     from data processing?

___ Yes   ___ No

If "No," please identify the person who performs this function.

_____

_____

12. Is the product ever rerun by data processing?

___ Yes   ___ No

If "Yes," (a) How frequently? _____

_____

(b) Why were reruns necessary? _____

_____

(c) How do you make sure that rerun material is correct?

_____

13. If you have/had problems with this product, with whom would/

did you discuss them? _____

_____

Is this person authorized to make changes to the product?

___ Yes   ___ No   ___ Unknown

14. Do you maintain correspondence with data processing or other
     departments concerning the product?

___ Yes   ___ No   (If yes, obtain copies)

15. Could you effectively perform your duties

(a) without this product?   ___ Yes   ___ No

(b) if this product were produced
    less often?   ___ Yes   ___ No

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16. Did you or your department participate in designing the product?

____ Yes   ____ No   ____ Unknown

17. Does this product save you any clerical effort?

____ Yes   Explain _____

____ No   _____

18. Can this product be improved to make your job easier?

____ Yes   Explain _____

____ No   _____

19. How often do you refer to this product?

____ Daily
____ Weekly
____ Monthly
____ Annually
____ Never
____ Other (Explain _____)

20. How long is the product kept after receipt?

____ 1 day   Filed at (location) _____
____ 1 week   _____
____ 1 year
____ Other (Explain _____)

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