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BY THE U.S. GENERAL ACCOUNTING OFFICE

Report To The Mayor Of The District Of Columbia

Better Management Would Improve The Effectiveness Of The District Of Columbia's ADP Resources

The District of Columbia government relies heavily on ADP resources in administering its programs and delivering governmental services. Inadequate planning and management have reduced the effectiveness of ADP support, adversely affected agencies' operations and service to the public, and resulted in wasted city funds.

GAO recommends actions to the Mayor, the D.C. General Hospital, and the University to improve the planning, management, and control of ADP operations.



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

GENERAL GOVERNMENT
DIVISION

B-200196

The Honorable Marion S. Barry, Jr.
Mayor of the District of Columbia
Washington, D.C. 20004

Dear Mayor Barry:

This report identifies problems the District of Columbia is experiencing in managing and using its automatic data processing resources. The report contains recommendations to improve the planning, management, and control of the District government's automatic data processing operations.

We made our review pursuant to section 736(a) of the District of Columbia Self-Government and Governmental Reorganization Act (Public Law 93-198, 87 Stat. 774), approved December 24, 1973, and are submitting the report in accordance with section 736(b)(1) of the act.

Section 736(b)(3) of the act requires the Mayor, within 90 days after receiving our audit report, to state in writing to the District Council what has been done to comply with our recommendations and send a copy of the statement to the Congress. Section 442(a)(5) of the same act also requires the Mayor to report, in the District of Columbia's annual budget request to the District Council, on the status of efforts to comply with such recommendations.

We are sending copies of this report to interested congressional committees and the Director, Office of Management and Budget.

Sincerely yours,

William J. Anderson
Director



D I G E S T

The District of Columbia relies on automatic data processing (ADP) resources in administering its programs and delivering governmental services. The cost of ADP operations for fiscal year 1982 is expected to range from \$30 to \$35 million, or about two percent of the total operating budget. Although this amount is relatively small, the cost of programs managed or controlled with information maintained by computers is a significant portion of the District's \$1.6 billion operating budget. Support provided by ADP resources is so important that many programs could not be administered without them. (See p. 1.)

Although ADP resources provide essential support to the District, inadequate management practices have reduced the effectiveness of this support, affected agency and ADP operations, adversely affected service to the public, and resulted in wasted city funds. The city administration recognizes the problems and has begun actions to correct them.

BETTER PLANNING AND MANAGEMENT
PRACTICES ARE NEEDED TO IMPROVE
OPERATIONS

The District of Columbia has not established structured processes for long-range planning or used good management practices to conduct and manage its ADP operations. Also, the District has not established formal policies, standards, and procedures for long-range planning, software development and maintenance, contracting for software development, or computer performance evaluation.

The District is not able to identify its future information needs or the strategies and resources required to meet those needs. (See pp. 6 to 10.) Newly developed software has not always met users' needs or been adequately tested and documented. (See pp. 11 to 14.) Software changes have not always been accurate

or completely tested or documented. (See pp. 14 and 15.) Existing general contracting policies and procedures are not always followed. (See pp. 15 and 16.) District agencies have not conducted programs to measure and evaluate the performance of computer resources. (See pp. 16 and 17.) As a result, the collection of city revenue has been lost or delayed, additional funds have been spent to correct software which did not fulfill users' needs, the public has been inconvenienced by errors, and agency operations have been disrupted.

BETTER PERSONNEL MANAGEMENT
PRACTICES ARE NEEDED TO MITIGATE
STAFFING PROBLEMS

The District of Columbia has been steadily losing experienced ADP personnel and has found it hard to attract qualified replacements. Managers attributed these difficulties to the District's residency requirement and the lack of career development and training programs. Although turnover of personnel is common in the industry, District officials believed the losses and the lack of training were hurting ADP operations. For example, officials said their ability to meet users' needs and maintain software was being hampered. Although lifting the residency requirement for employees and increasing recruiting efforts have helped, the District still needs career development and training programs to attract and retain staff and attain high quality operations. (See pp. 19 to 24.)

AUDITS AND EVALUATIONS ARE NEEDED

The Office of the Inspector General has not evaluated the economy, efficiency, and effectiveness of the many automated systems and computer centers which support District programs and services to the public. Such evaluations are essential to ensure that ADP resources are properly acquired, managed and used; software systems are accurate and reliable; and adequate support is provided to District agencies. (See pp. 25 and 26.)

CITY ADMINISTRATION HAS BEGUN ACTION
AIMED AT IMPROVING OPERATIONS

The city administration has initiated action to begin correcting problems and to improve the management of the District's ADP resources and operations. Some of the city administration's priority objectives include developing (1) long-range plans for each agency and for the District government; (2) policies, standards, and procedures for software, quality control, hardware, procurement, resource performance, personnel classification and training; and (3) an executive education program. Although the District government is making a good start, it needs to do more to develop the management organization and processes which will solve its ADP problems.

RECOMMENDATIONS

GAO recommends that the Mayor direct the City Administrator to:

- Require District agencies to prepare and submit long-range ADP plans.
- Establish a coordinated planning process and prepare a long-range ADP plan for the District of Columbia.
- Establish a comprehensive management process and related policies, standards, and procedures for software development, software maintenance, contracting for software development, and computer performance management.
- Establish career development programs for ADP employees.
- Establish training policies and programs for the various types of ADP employees.

Similarly, GAO recommends that the D.C. General Hospital and the University of the District of Columbia (two independent agencies) implement these recommendations to increase the effectiveness of their ADP resources.

GAO also recommends that the Mayor direct the Inspector General of the District of Columbia

to provide sufficient audit-related ADP training to its staff and to periodically evaluate the economy, efficiency, and effectiveness of ADP systems and computer centers.

AGENCY COMMENTS

The District of Columbia, the D.C. General Hospital, and the University of the District of Columbia agreed with GAO's findings and recommendations. The organizations have initiated actions to implement GAO's recommendations.

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GAO conducted this review because of the city's long-standing problems and sustained congressional interest in this area. GAO's objective was to evaluate the overall management of the District government's ADP resources.

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ABBREVIATIONS

ADP	automatic data processing
DHS	Department of Human Services
DOT	Department of Transportation
F&R	Department of Finance and Revenue
GAO	General Accounting Office
MPD	Metropolitan Police Department
UDC	University of the District of Columbia

CHAPTER 1

INTRODUCTION

The District of Columbia government relies heavily on automatic data processing (ADP) resources in administering its programs and delivering governmental services. The District government began automating its manual accounting and revenue systems in 1961 and leased its first computer in December 1962. Today, support provided by these resources is so important that many programs could not be administered without them.

The District government's congressional budget submission showed that the fiscal year 1982 ADP costs were expected to be nearly \$26 million. This amount does not represent total estimated costs because all District agencies do not explicitly show these costs in their budgets. A District government official estimated that the total cost of ADP resources for all city agencies would probably range from \$30 to \$35 million, or about two percent of the fiscal year 1982 operating budget. Although the cost of ADP resources is small compared to the total budget, the cost of programs and activities managed or controlled with information maintained by these resources is a significant portion of the District government's \$1.6 billion operating budget. For example, ADP resources are used to administer and support activities such as income, business, and property tax programs; voter registration and elections; police operations and investigations; fire protection and emergency services; human services and support programs; vehicle registration and licensing programs; restaurant and hotel inspection programs; and educational instruction in public schools and the University.

ORGANIZATION AND MANAGEMENT OF ADP RESOURCES

The District government's ADP resources are organized and managed on a decentralized basis. The decentralized management approach has been used since December 1962, when the District government began leasing and acquiring computer equipment. Since then, District agencies have been responsible for managing their ADP activities, including providing for them in their budget submissions; selecting and acquiring computer equipment or using the equipment of others; determining information needs; acquiring and developing software; contracting for services; managing and operating computer equipment; purchasing supplies; maintaining software and hardware; and hiring and training personnel.

District agencies also determine the level and extent of ADP support they need. The prior city administration only required that any purchase order amounting to \$5,000 or more be submitted to the Office of the City Administrator for review. The current administration lowered this limit to \$2,500 and required written

justifications for purchases of hardware, software, and ADP services. While the decentralized approach to managing ADP is generally considered to be more supportive of individual agencies, complete decentralization has resulted in some problems for the District.

District agencies have not established formal policies, standards, and procedures to guide the planning, administration, and control of their ADP resources. Additionally, complete decentralization has provided the city administration with little opportunity to become involved in planning for and controlling the use of these resources. As discussed later, the city administration has started to take action to increase its involvement in the decisionmaking process and to improve the management of the District's ADP resources.

Computer problems known for years--
corrective action has just started

The District government's ADP management problems have been known for years. Between 1972 and 1976, three separate studies cited many citywide and departmental ADP problems and proposed solutions. These study reports noted such problems as the lack of (1) management policies, standards, and procedures for operations and activities; (2) plans and priorities; (3) equipment utilization monitoring; (4) effectiveness in meeting management needs; and (5) training and development programs for employees. City administrations had, until recently, taken little or no action to resolve these problems.

The first report, prepared by the Commission on the Organization of the Government of the District of Columbia, was issued on August 17, 1972. The report discussed the District government's organizational and operational problems, including those related to ADP. The second report, prepared by Arthur Andersen & Company, was issued on June 19, 1976. The report discussed shortcomings in the District's accounting and financial management systems, including the related ADP problems. The third report, prepared by the Mayor's Task Force On Automatic Data Processing And Procedures, was issued on November 16, 1976. The report addressed the data processing problems which were identified in the Arthur Andersen & Company report. While the purposes of these reports were different, the discussions of ADP problems were remarkably similar--basic management inadequacies in planning, managing, and controlling these types of activities.

The city administration recognizes the need to strengthen the management of the city's ADP resources and has begun taking action to do so. During the course of our work, we met periodically with the Special Assistant to the City Administrator for Information Systems. During these meetings, we discussed with him our observations, tentative findings, and possible solutions.

We also discussed with the City Administrator and his Special Assistant our overall findings, conclusions, and recommendations regarding the city's ADP operations. They told us they recognized the city's ADP problems and the need to begin making improvements. In this regard, on January 22, 1981, the City Administrator signed a memorandum announcing to all District agencies that the city administration had assumed direct policy control over these resources. One month later, in consultation with the District's ADP managers, the Office of the City Administrator developed a plan to start making citywide improvements. The plan lists in general terms the city's objectives, problems, and the corrective actions required to achieve the objectives. Appendix I contains a list of these objectives.

Although the strategies, actions, and progress to date are preliminary to establishing and effecting the final improvements, they are noteworthy. The actions are designed to establish the management structures and processes for these critical resources. This report contains recommendations to improve ADP planning, software development and maintenance, software contracting, computer performance, personnel management activities, and internal audit and evaluation of ADP activities. We believe they will be of use to the District in finalizing its ADP policies, standards, and procedures and in making additional management improvements.

DISTRICT ACTION ON SUGGESTIONS OF THE HOUSE COMMITTEE ON APPROPRIATIONS

During our review of the District government's ADP operations, we met periodically with the staff of the Committee on Appropriations, House of Representatives, to discuss our work and tentative findings, conclusions, and recommendations. Subsequently, in its September 17, 1981, report accompanying the fiscal year 1982 appropriations bill for the District of Columbia, the committee suggested that the District government make certain improvements in its ADP operations. These included: (1) establishing a long-range plan and a planning process for the government and each agency using these resources; (2) establishing a comprehensive management process and related policies, standards, and procedures for software development, software maintenance, and software contracting; (3) establishing career development and training programs; (4) strengthening the ability of the Inspector General to review and evaluate ADP activities; and (5) providing the necessary resources to accomplish these objectives. The committee also directed the District government to report its progress in meeting the above suggestions and to review our findings with us. Appendix II contains an excerpt from the committee report.

On January 22, 1982, officials told us that the District government is taking action on the committee's suggestions. The officials said they are beginning to assemble information in

order to report their progress to the committee during the fiscal year 1983 appropriations hearings. The District government's actions on the committee's suggestions and our recommendations are discussed in the text of chapters 2 through 5.

OBJECTIVES, SCOPE, AND METHODOLOGY

The objective of our review was to assess the overall management of the District government's ADP resources. We reviewed the adequacy of practices and programs in the areas of (1) long-range plans and planning, (2) software systems development and maintenance, (3) software development contracting and contract management, (4) computer performance management, (5) career management, (6) personnel training, and (7) internal audit and evaluation of ADP operations.

We interviewed city administration officials, ADP officials, agency program officials, and ADP personnel and reviewed their records, when available, to make the assessments listed above. We interviewed ADP officials and personnel to determine the various ADP practices. We found there was a general lack of information and documentation on ADP practices and operations. For example, there were no written citywide or agency long-range ADP plans or ADP policies, standards, or procedures. In addition, there was no citywide information on ADP operating costs, hardware inventories, software inventories, personnel inventories, resource usage data, etc.

We reviewed the ADP units of the Department of Finance and Revenue, the D.C. General Hospital, the Department of Human Services, the Department of Transportation, the Metropolitan Police Department, and the University of the District of Columbia. The D.C. General Hospital and the University of the District of Columbia are independent agencies and are not under the direct control of the Mayor. We selected the units to review on the basis of their size and congressional interest in them. We met with the Inspector General of the District of Columbia to determine the degree to which the District's ADP operations had been reviewed and evaluated.

Our review was made in accordance with GAO's current "Standards for Audit of Governmental Organizations, Programs, Activities, and Functions."

We excluded the District's new Financial Management System from this review because the system and related documentation were being reviewed and evaluated separately by our Office. Our responsibilities in this area include reviewing and approving the accounting principles and standards, design of the system and subsystems, documentation of the financial system and software systems, and systems modifications initiated by the District government.

We conducted preliminary work at the District's SHARE computer center which provides computer support to many city agencies and the Financial Management System. Although we intended to review the SHARE computer center's operations, we did not because SHARE managers were deeply involved with solving major problems related to computer operations and managerial control and we did not want to divert their time from this effort.

During the course of our work, we briefed city officials on the problems identified and our tentative conclusions and recommendations. Those briefed included the City Administrator and his Special Assistant; the Assistant City Administrator for Financial Management; the Chairman, Committee on Government Operations, Council of the District of Columbia; and department and ADP officials of the agencies we reviewed.

CHAPTER 2

CITYWIDE AND AGENCY PLANNING SYSTEMS ARE NEEDED

TO PROVIDE ADEQUATE RESOURCES FOR THE FUTURE

The District government has no formal long-range ADP planning process to identify its information needs or the strategies and resources required to meet those needs. Similarly, none of the six District agencies we reviewed had long-range planning processes or plans for their ADP operations. Long-range planning is an important management function because without it the District administration's and District agencies' information needs, project priorities, project costs and benefits, and hardware and personnel needs remain unknown. In addition, some agencies have experienced ADP problems directly related to the lack of planning. The lack of planning has adversely affected the public and has resulted in lost or delayed collections of city revenue.

The city administration is beginning to establish a long-range planning process as one of its efforts to improve the management of the city's ADP operations. A District official said some planning guidance has been provided to agencies and he expects them to have their first long-range plans by April or May 1982. The official added that he hopes to use the agencies' plans to develop a long-range ADP plan for the District government.

THERE ARE NO REQUIREMENTS TO PLAN

The District government and the six agencies we reviewed (Finance and Revenue, D.C. General Hospital, Human Services, Police, Transportation, and the University) have no long-range ADP plans or planning processes. In addition, neither the District government nor the six agencies have established policies and procedures which require planning and which establish the framework for long-range planning.

Planning for ADP operations in District agencies has taken the form of preparing annual budgets. While annual budget preparations are necessary, they are relatively shortsighted in that only increases over the previous year's expenditures need be identified. Long-range planning processes, on the other hand, provide the means to systematically identify information needs and provide for the orderly acquisition and development of all ADP resources required to meet those needs. A long-range plan, for example, provides (1) information on current and future ADP capabilities and needs, (2) the capability to coordinate and develop resources, (3) the capability to determine strategies and priorities, and (4) a management tool against which to measure the performance of ADP management and to control ADP activities.

ADP officials at the Department of Finance and Revenue, the Department of Transportation, the Metropolitan Police Department, and the University told us they recognize the need for long-range planning. Finance and Revenue, Police, and University ADP officials told us that they operate in a reactive mode because they have no formal plans. For example, a Police Department official told us that the Department does not identify needs, determine priorities, develop strategies to achieve the needs, or develop and acquire resources to implement the strategies. Instead, he said, they look at resources which are available and then decide which departmental needs and requirements can be met. Under this method of operating, it is quite difficult to prepare for the future in an orderly fashion.

THE LACK OF PLANNING HAS ADVERSELY AFFECTED
THE PUBLIC AND AGENCY OPERATIONS

District agencies have experienced some problems directly related to the lack of planning. The lack of formal planning has affected the public, agency operations, ADP operations, and has also resulted in lost or delayed collections of city revenue. For example:

- The D.C. Department of Transportation experienced problems with its new parking enforcement program because it had not adequately planned to take over operation of the Superior Court's automated parking violations software system. The Department took over operation of the Court's software system on an interim basis from February to November 1979 until its new automated system was completed. Because the takeover had not been adequately planned, Department personnel were not sufficiently familiar with the procedures for operating the court system. Information used by parking enforcement personnel was not always timely and accurate. As a result, they towed and booted automobiles on which there were no outstanding violations. Records were not available on the number of cars erroneously towed and booted or the associated cost of the errors for the period the interim system was used.
- Department of Transportation ADP personnel had to work overtime for about two weeks to prepare for the 1980 vehicle registration because preparations had not been started early enough to complete the effort during normal working hours. In addition, parking enforcement officials told us that because of ADP problems, about 25,000 vehicles with outstanding parking violations were registered in 1979 without prior settlement of the outstanding parking violations. At that time, the lowest parking fine (without penalties) was \$5.00 per violation. Failure to

collect the outstanding tickets before registering the vehicles cost the city at least \$125,000 (\$5.00 x 25,000 vehicles) in uncollected revenue.

--The University acquired and installed a new computer without acquiring new personnel with the needed skills or training its personnel to operate the new computer and maintain the computer's operating software. As a result, the University had to contract with the manufacturer to maintain the computer's operating software for the first year at a cost of about \$40,000. During the period of the contract, however, the University did not train its ADP personnel to take over the maintenance of the computer's operating software. The contract was not renewed the following year because price increases would have raised the cost to about \$90,000. As a result, the University took over operations of the computer without having staff capable of maintaining the operating software.

--The Board of Elections and Ethics improperly procured for \$647,700 an automated voting system on a sole source basis. In a December 18, 1979, decision 1/, the Comptroller General of the United States concluded that the Board of Elections and Ethics had not developed specifications or minimum needs to decide which voting system would best meet its requirements. Had the Board properly planned to meet its automated information and ADP needs, it would have identified and defined its specific needs and requirements for automation.

CITY ADMINISTRATION HAS BEGUN TO TAKE ACTION TO DEVELOP LONG-RANGE PLANS

The Office of the City Administrator developed a plan dated February 17, 1981, to begin improving ADP management and operations. The plan calls for the development of citywide and agency long-range plans, including a citywide inventory of all ADP resources and establishment of committees for coordination.

On January 22, 1982, the Special Assistant for Information Systems told us that he has specified the elements which are required in agencies' long-range plans. He also said an ADP advisory committee consisting of city ADP managers has met several times to carry out the city's plan to improve ADP operations. The city's ADP policy board, which will consist of department heads, has not yet been activated.

1/"Matter of Computer Election Systems, Inc." (B-195595, Dec. 18, 1979).

The Special Assistant said he expected that the agencies' first long-range ADP plans would be completed by April or May 1982. He said that once the agencies' plans are completed, he hopes to be able to use them to prepare a citywide long-range plan. He added that the ADP advisory committee has not yet completed its work.

CONCLUSIONS

Multiyear planning is essential to identify and provide the information managers need to help accomplish organization and program goals. The District government and its agencies have not established long-range planning processes or plans to systematically identify needs and objectives, set forth priorities, or develop strategies for the orderly acquisition and development of hardware, software, and personnel resources to meet their missions, needs, and objectives. Some agencies have experienced ADP problems directly related to the lack of planning. These problems have adversely affected the public and have resulted in lost or delayed collection of city revenue. Without a long-range plan, there is no foundation on which to base the acquisition, development, or use of critical ADP resources. There is no means of measuring whether resources are being acquired, developed, or used in a manner which is most advantageous to the District government and its agencies. Also, there are no criteria for measuring the performance of ADP management or the achievement of objectives.

We recognize that the District government is beginning to make progress in the area of planning. District agencies have started preparing their first long-range ADP plans, and officials expect to prepare a citywide plan after the agencies' plans are completed. Much more, however, needs to be done to establish coordinated planning processes and prepare comprehensive plans.

RECOMMENDATIONS

We recommend that the Mayor of the District of Columbia direct the City Administrator to:

1. establish a coordinated ADP planning process for the city government;
2. require District agencies that use ADP resources to prepare and submit long-range plans; and
3. prepare a long-range ADP plan for the District government.

We further recommend that the long-range plans for each agency and for the District government be updated at least annually. The plans should include agencies' information and ADP

needs; proposed software system projects; costs and benefits; priorities; workloads; and equipment and personnel required to support the workloads.

We also recommend that the D.C. General Hospital and the University of the District of Columbia implement the recommendations listed above as appropriate with their status as independent agencies.

AGENCY COMMENTS AND OUR EVALUATION

The District government and the D.C. General Hospital and University of the District of Columbia (two independent agencies) agreed that long-range ADP planning is needed. Their actions to establish coordinated ADP planning processes and prepare long-range ADP plans are preliminary, but they represent a step forward toward improving ADP management and operations.

In a February 25, 1982, meeting to comment on our report, the City Administrator said the District government agreed with our findings and recommendations. He said, as we note on pages 8 and 9, that District agencies are now in the process of preparing long-range ADP plans and, once completed, a long-range ADP plan will be prepared for the District government. The overall long-range ADP plan will include all District agencies under the control of the Mayor.

In commenting on our report on February 23, 1982, the Chief of Management Services said the Hospital agreed with our findings and recommendations. He said the D.C. General Hospital believed that, thus far, its overall strategy for implementing commercially developed systems has been sufficient. He said the Office of Management Services is beginning to prepare a long-range ADP plan for the hospital to provide for the acquisition, development, and implementation of management information systems and incorporate information resources management concepts into the hospital's management and operations.

In providing the University's comments on February 26, 1982, the Director, Office of Internal Audit, said the University agreed with our findings and recommendations. He said that University officials have initiated action to prepare a long-range ADP plan for the University.

CHAPTER 3

BETTER MANAGEMENT PRACTICES ARE NEEDED

TO IMPROVE OPERATIONS AND RESOURCE USAGE

District agencies we reviewed have not (1) used good software development and maintenance practices, (2) consistently followed the city's contracting requirements, or (3) evaluated the performance of their computer operations. As a result, information needs have not been met, software changes have not been accurate and reliable, software documentation has not been updated, computer efficiency has not been identified, and the effectiveness of computer output has not been tested.

District agencies we reviewed have not established policies, standards, and procedures to form the foundation for their ADP management systems. In addition, the District government has not established citywide policies or guidelines to provide an overall framework and direction for agencies' acquisition and use of these resources.

City funds have been wasted because of these problems. For example, the inadequate testing of a software modification led to the overissuance of \$106,000 of food stamps.

The City Administrator and his Special Assistant agreed that agencies' practices need improvement. They also agreed that formal policies, standards, and procedures need to be developed to properly conduct and manage the District's ADP operations.

BETTER SOFTWARE DEVELOPMENT AND MAINTENANCE PRACTICES ARE NEEDED TO IMPROVE EFFECTIVENESS AND RELIABILITY

District agencies have not always adequately defined their information needs, tested new software systems, tested software modifications and changes, adequately documented new software systems, or adequately documented software modifications and changes. These practices have adversely affected the public and ADP operations and have wasted city funds. ADP officials at the five agencies which developed software (Finance and Revenue, Human Services, Police, Transportation, and the University) said that their efforts in this regard have been minimal. They therefore believed they had not experienced any adverse effect from their informal software development processes.

Five of the six District agencies we reviewed had no formal software development policies, standards, or procedures. The sixth, D.C. General Hospital, uses a commercially developed and operated ADP system and therefore does not develop its software

systems inhouse. Because there are no formal software development guidelines, District agencies have no established criteria or methods for:

- conducting feasibility studies;
- preparing cost-benefit analyses;
- preparing software documentation;
- testing software accuracy;
- controlling software changes;
- preparing software operations manuals, maintenance manuals, or users manuals;
- preparing conversion and implementation plans or procedures; or
- performing post-implementation audits.

In addition, none of the agencies required their software development processes to be phased so as to provide users and management the opportunity to formally review progress, approve the completion of each software development phase, or authorize work to begin on the next phase.

At the time of our visits the District agencies had neither recently developed nor were in the process of developing any software systems. However, two agencies experienced problems with software development contracts because of inadequate software development practices. The agencies were not completely satisfied with the software systems delivered by the contractors. Officials of both agencies told us the contracts were not sufficiently specific in areas such as information needs, software documentation, and quality assurance.

The D.C. Department of Transportation let a \$325,051 contract for the development of a software system to support its new traffic ticketing and adjudication functions. The Department experienced some problems because it had not adequately defined its information needs and requirements; specified software documentation standards; specified acceptance test procedures, methodology, or data; or provided for sufficient time to test and accept the delivered software. As a result:

- The software system did not provide the capability to transfer penalty points for minor moving violations from

adjudication records to drivers' history records. According to officials, drivers' records have not been updated to accumulate points for minor moving violations since the Department took over this responsibility in February 1979. There was no information available on how many drivers were at the penalty point limit and were thus subject to possible license suspensions. Also, Police and Transportation officials could not provide the number of minor moving violations or the associated number of points which were not transferred to drivers' history records. Information provided by the Police Department indicated that on the average there are about 15,700 total moving violations (major violations, minor violations, and warnings for District and non-District drivers) each month.

- ADP officials criticized the contractor's testing procedures and characterized them as inadequate.
- The contract administrator said he accepted software from the contractor without having sufficient time to review and test it. ADP and parking enforcement officials said software which did not function properly was accepted.
- ADP officials said they were not satisfied with the software and system documentation provided by the contractor.
- Adjudication branch officials said they were almost completely dissatisfied with the output products they received because the products did not meet their needs.

Department of Transportation officials recently told us that in August 1981 they let a \$30,000 contract for the development of software which would correct the penalty point transfer problem. The officials said the contract has been completed but they are still unable to transfer penalty points.

The Department of Human Services also experienced some problems with a \$38,000 contract it let for the development of a software system to support the food stamp program. Although the Department accepted the system from the contractor, ADP officials said they were not satisfied with it. Human Services ADP officials said they considered the software logic to be inadequate and untested. They also said the software delivered did not resemble the software documentation. As a result, ADP officials said two of the Department's personnel had to redevelop two programs at an additional estimated cost of about \$3,500.

The need for and importance of sound software development practices and software development contracting practices have been stressed in GAO reports on Federal agencies. 1/

Software maintenance practices are inadequate

District agencies' software maintenance practices do not ensure that software changes are adequately documented, adequately tested, or formally reviewed for accuracy and completeness of documentation. Human Services and Transportation ADP officials told us that they let their programmers decide whether to test software changes and modifications and determine the extent of such testing. Finance and Revenue, Police, and University ADP officials said they test all software changes and modifications. Finance and Revenue, Human Services, Transportation, and University ADP officials said the quality of their software documentation was not good. Police Department ADP officials said that although the quality of software documentation varied among their programmers, they considered it to be generally good. Human Services, Police, Transportation, and University ADP officials said that the lack of software documentation combined with personnel turnover could affect their ability to maintain software.

District agency officials said they have been using most of their computer analysts and programmers to change and modify existing software systems. In spite of this, the maintenance function is not well structured and controlled. Software testing and documentation problems have affected the public and ADP operations and have resulted in wasted District funds. For example:

--In 1979, Department of Human Services ADP personnel did not completely test modifications they made to the automated food stamp system, thereby allowing a software error to go undetected. The software error caused errors in much of the June 1979 regular monthly run of food stamp participation cards.

Although the Department corrected the software error, 1,123 duplicate cards (original and corrected) amounting to \$105,703 were issued and redeemed. (See GAO report entitled "Improved Collections Can Reduce Federal and District Government Food Stamp Program Costs," GGD-81-31, Apr. 3, 1981.)

1/"Government-Wide Guidelines and Management Assistance Center Needed to Improve ADP Systems Development" (AFMD-81-20, Feb. 20, 1981) and "Contracting for Computer Software Development--Serious Problems Require Management Attention to Avoid Wasting Additional Millions" (FGMSD-80-4, Nov. 9, 1979).

--The University's system development manager said that because of inadequate documentation, it was more efficient to rewrite a couple of small software programs than to try to understand and modify existing software. The official also said the lack of complete and up-to-date software documentation has delayed software modifications and changes and has required more staff time to make them.

The need for improved management of software maintenance has also been discussed in a GAO report on Federal agencies. 1/

EXISTING CONTRACTING PROCEDURES
SHOULD BE FOLLOWED

District agencies do not consistently follow the Department of General Service's general contracting requirements. The procurement and contracting policies and procedures which are contained in the Department's Materiel Management Manual apply to all District government agencies. Two agencies failed to follow these procedures, causing one contract to be improperly awarded and others to be inadequately administered.

In a December 18, 1979, decision 2/, the Comptroller General of the United States stated that the District improperly awarded a \$647,700 sole source contract for the procurement of a computer-based election system. The decision stated that the District's Board of Elections and Ethics did not comply with two provisions of the District's own contracting requirements. First, the District did not sufficiently define its minimum needs with the required specificity in order to make a rational decision in selecting a voting machine system. Second, the District did not use competitive procurement practices to obtain the lowest possible price for the voting system, nor did it conduct price negotiations with the vendor.

The Department of Transportation also did not comply with certain District contracting policies and procedures in two negotiated services contracts for ADP consulting services totaling about \$72,800. This resulted in inadequate administration of these contracts. The Department's contract administrator (1) changed the contracts' scopes of work but did not, as required, formally amend the contracts to incorporate the changes; (2) did not, as required, inform the contracting officer of the contractors' non-compliance with terms of the contracts; (3) certified for payment invoices which did not always accurately describe the services performed (policies require that the administrator

1/"Federal Agencies' Maintenance of Computer Programs: Expensive and Undermanaged" (AFMD-81-25, Feb. 26, 1981).

2/See footnote on page 8.

certify receipt of the services cited in the contractor's invoices, and that invoices accurately describe the services rendered); (4) did not, as required, maintain chronological logs of all events associated with administration of the contracts; and (5) did not, as required, prepare and submit "close-out memoranda" stating that provisions of the contracts, the closing reviews, and the contract documentation had been completed.

COMPUTER PERFORMANCE MANAGEMENT PROGRAM IS
NEEDED TO MEASURE EFFICIENCY AND EFFECTIVENESS

The District government needs a comprehensive computer performance management program to systematically measure and evaluate the efficiency and effectiveness of its use of computer resources and the effectiveness of computer output. The District does not have such a program or the policy and procedural framework to establish one. None of the computer centers at the agencies we visited had a performance management program. Only one agency, the Police Department, ever measured computer performance. As a result, the District's ADP managers do not have the quantitative information to identify and control productivity levels, service to users, or use of ADP resources. They also cannot objectively determine future computer resource needs. Similarly, without such information, District government and agency management cannot objectively assess the effectiveness of computer centers or computer center management.

Performance management information and reports can serve as important elements to provide operational and procurement control, and to plan for ADP resources. For example, the Police Department used to collect and periodically analyze computer utilization information. The information was used to determine computer resource capacity and measure utilization, identify congestion and adjust work flows, and provide information for resource planning and procurement decisions. Although these analytical efforts were intermittent and not a part of a formal performance management program, they provided some valuable operational and planning information. Police ADP officials were able to demonstrate through quantitative analyses of computer response times that more computer memory was needed to support the online operations of the criminal justice community. The analyses were used to justify the procurement of more memory.

The District government, as a part of a performance management program, also needs to systematically evaluate the efficiency and effectiveness of its computer output and to monitor complaints concerning its ADP services. Excluding the D.C. General Hospital, none of the District agencies we reviewed (Finance and Revenue, Human Services, Police, Transportation, or the University) had a formal program to periodically assess computer output. Similarly, the agencies did not have formal systems to record and track complaints regarding the quality and timeliness of their ADP services. Computer service complaints should

be recorded and tracked through resolution to provide quality of service information, customer service information, and service trend information to management.

CITY ADMINISTRATION HAS BEGUN
ACTION TO IMPROVE ADP PRACTICES

We discussed with the City Administrator and his Special Assistant for Information Systems the importance of improving practices and developing comprehensive policies, standards, and procedures for software development and maintenance, software contracting and contract management, and computer performance management. We also discussed the need for citywide policies, standards, and procedures for these activities since none of the agencies had them.

The City Administrator and his Special Assistant told us they recognized the need for comprehensive policies, standards, and procedures for the city's ADP operations. The Office of the City Administrator developed a plan dated February 17, 1981, to improve the city's ADP management and operations. The plan calls for the creation and issuance of citywide ADP policies, standards, and procedures for the activities with which we are concerned. On January 22, 1982, the Special Assistant for Information Systems told us that they were working on policies, standards, and procedures but none have been completely developed or adopted.

CONCLUSIONS

District agencies have not used good management practices to develop and maintain software. District agencies have not always complied with existing contracting requirements. In addition, District agencies do not properly manage the performance of computer resources. As a result, the District government and the public have been adversely affected and city funds have been wasted.

It is important to properly manage resources which support so many important District programs, functions, and activities. If properly managed and coordinated, ADP resources can be an important tool to increase productivity, provide better information and program support, and reduce the cost of many labor-intensive operations.

We believe the city administration recognizes its ADP problems and the need to establish sound management processes to prevent further problems. However, the city administration is only beginning to take action to establish policies, standards, and procedures to improve agencies' ADP practices. In this regard, we are making recommendations to help the District government improve its ADP practices.

RECOMMENDATIONS

We recommend that the Mayor direct the City Administrator to:

1. Establish a comprehensive management process and related policies, standards, and procedures for software development, software maintenance, and computer performance management.
2. Establish policies, standards, and procedures for software development contracting which incorporate the methodology and standards in the city's software development policies, standards, and procedures.
3. Require District agencies which use ADP resources to implement these policies, standards, and procedures.

We also recommend that the University of the District of Columbia implement the recommendations listed above as appropriate with its status as an independent agency.

AGENCY COMMENTS AND OUR EVALUATION

The District government and the University of the District of Columbia agreed that improved ADP management practices are needed. Although the D.C. General Hospital does not conduct some of the activities noted in this chapter, the Hospital said it would implement the recommendations when it begins to do so. In our opinion, the city's actions and commitments, if properly implemented, will do much to improve ADP management and operations.

In commenting on our report, the City Administrator said the District government agreed with our findings and recommendations. He said, as we note on page 17, that the District government has already initiated action to implement the recommendations for all District agencies under the control of the Mayor.

The Director, Office of Internal Audit, University of the District of Columbia, said that the University concurred with our findings and recommendations. Although he could not provide specifics, he said the University has already begun to plan and implement the improvements on an independent agency basis.

The Chief of Management Services said the D.C. General Hospital concurred with our recommendations. He added that the hospital will comply with the recommendations on an independent agency basis.

CHAPTER 4

THE DISTRICT NEEDS TO STRENGTHEN ITS PERSONNEL MANAGEMENT SYSTEM

The District government has been losing experienced ADP personnel and has had problems attracting highly qualified personnel to replace them. While turnover of personnel is common in the ADP community, some officials told us the District's losses of experienced personnel and replacement difficulties have begun to adversely affect ADP operations.

District officials recognize the personnel problems and have begun corrective action, but they need to do more. Specifically, the District needs to establish career development programs, training policies, and training programs for ADP personnel.

ADP PERSONNEL VACANCIES AND TURNOVER ARE CHRONIC PROBLEMS

At the five District agencies which employ ADP personnel, we found that employee vacancy and turnover rates had generally increased from 1978 to 1981. Agency officials told us that these problems have, to varying degrees, begun to adversely affect their ADP operations.

As shown in the table below, the agencies generally experienced a substantial increase in vacancy rates from 1978 to 1981.

<u>End of fiscal year</u>	<u>Personnel Levels</u>				
	<u>F&R</u>	<u>DHS</u>	<u>MPD</u>	<u>DOT</u>	<u>UDC</u>
<u>1978:</u>					
Authorized	30	52	43	18	39
Actual	29	45	42	13	39
Percent vacant	3.3	13.5	2.3	27.8	-
<u>1979:</u>					
Authorized	34	47	43	19	30
Actual	33	41	43	13	30
Percent vacant	2.9	12.8	-	31.6	-
<u>1980:</u>					
Authorized	33	53	43	22	28
Actual	26	42	37	14	27
Percent vacant	21.2	20.8	14.0	36.4	3.6
<u>1981:</u>					
Authorized	30	55	43	22	44
Actual	29	38	36	15	32
Percent vacant	3.3	30.9	16.3	31.8	27.3

Note: Abbreviations are as follows:

F&R - Department of Finance and Revenue
DHS - Department of Human Services
MPD - Metropolitan Police Department
DOT - Department of Transportation
UDC - University of the District of Columbia

According to ADP officials in these agencies, the vacancies are in key positions, such as systems analysts, computer programmers, computer operators, and input/output control clerks.

In addition to chronic shortages in key positions, we also found that personnel loss rates had risen dramatically for two of the agencies between 1978 and 1980 and continue to be relatively high.

ADP Personnel Losses and Replacements
(on board strengths)

<u>Fiscal year</u>	<u>F&R</u>	<u>DHS</u>	<u>MPD</u>	<u>DOT</u>	<u>UDC</u>
<u>1978:</u>					
Beginning	29	(a)	38	15	44
Loss	2 (6.9%)		4 (10.5%)	2 (13.3%)	5 (11.4%)
Hired/transferred	2		8	-	-
End	29		42	13	39
<u>1979:</u>					
Beginning	29		42	13	39
Loss	2 (6.9%)		1 (2.4%)	-	11 (28.2%)
Hired/transferred	6		2	-	2
End	33		43	13	30
<u>1980:</u>					
Beginning	33		43	b/16	30
Loss	13 (39.4%)		14 (32.6%)	2 (12.5%)	3 (10%)
Hired/transferred	6		8	-	-
End	26		37	14	27
<u>1981:</u>					
Beginning	c/23		37	14	27
Loss	-		7 (18.9%)	1 (7.1%)	4 (14.8%)
Hired/transferred	6		6	2	9
End	29		36	15	32

a/ Details not provided by DHS Office of Information Systems.

b/ Reflects transfer of three positions to ADP unit.

c/ An F&R ADP official could not explain the difference between personnel levels at the end of fiscal year 1980 and the beginning of fiscal year 1981.

Complete information was unavailable as to why such large numbers of District employees left during the period shown in the previous table. On the basis of our discussions with agency officials and our review of available information, however, it appears that many of the losses were due to resignations as opposed to retirements or the various other reasons people leave jobs. For example, during the 1978 through 1980 period shown in the previous table, the Department of Finance and Revenue lost 17 employees, 10 of whom resigned. During the same period, 9 of 16 Metropolitan Police Department employees left for other employment. Also, of the 19 employees who left the University during the period, 11 mentioned higher paid employment and/or the desire to acquire wider technical skills as reasons for leaving.

VACANCY AND TURNOVER PROBLEMS DEMAND COORDINATED SOLUTIONS

Agency officials cited several reasons for the problems they had filling vacancies and retaining employees. The main reasons offered were the District's residency requirement, hiring freezes, lack of career development programs, and the lack of a training program. The District has made some progress in removing obstacles associated with the residency requirement, but career development and training programs still need to be developed.

On March 12, 1981, in an effort to fill vacancies, the District government temporarily exempted computer programmers and their supervisors, computer systems analysts, computer specialists, and managers from the residency requirement. This temporary exemption expired November 17, 1981. During that 8-month period, 46 of the 79 vacancies in the above positions throughout the city were filled. During the same period, however, 12 employees left the city's employ. Six of these went to work for the Federal Government and five for private industry. This left 45 unfilled vacancies. These, together with additional staff requested primarily to take over support of the Financial Management System from the contractor, accounted for 77 vacancies--about the same as when the temporary exemption began 8 months earlier.

Recently, permanent legislation exempting ADP employees from the residency requirement was passed by the City Council, signed by the Mayor, and transmitted to the Congress for the required congressional review. Meanwhile, the District has passed another emergency exemption measure. The city administration also has plans to develop a more aggressive recruiting program, but these plans are still being formulated.

Career development and training programs are needed

Currently, the District does not have a career development program for its ADP personnel. Such a program is needed to establish career positions, career paths, and the requirements needed

to progress. In our discussions with ADP officials in the agencies we visited, the lack of a career development program was mentioned several times as a factor adversely affecting the District's ability to retain ADP personnel.

Similarly, the District government and its agencies have not yet developed formal training policies, plans, or programs for ADP personnel. Formal training policies, plans, and programs are necessary to identify and provide for the types and levels of training required to ensure an adequate number of properly skilled employees.

ADP officials said that only training essential to continue ADP operations has been given since 1978. For example, ADP officials said the only training provided by the Department of Human Services was related to a new management information system. Metropolitan Police Department officials said that training given to their staff was necessary to meet grant requirements, maintain support of a dispatch system, and train newly assigned security personnel. Department of Transportation officials said only one essential training course had been offered since 1976, although two additional training courses have recently been acquired which are critical to maintaining their current operations. University officials said they developed a training schedule for 16 employees for fiscal year 1980 but because of budget problems, only 1 employee was able to attend a training course. Department of Finance and Revenue ADP officials said that because of their relatively static environment, the lack of training has not played a significant role in the turnover and recruitment of staff. They added that it will, however, become a problem in the future if further training is not made available.

The city administration has plans to improve the District's ADP operations by improving position classifications and career paths, and developing and implementing training programs for managers, staffs, and users. These actions, however, are still in the planning stage.

PERSONNEL PROBLEMS AFFECT OPERATIONS

In the opinion of ADP officials at the agencies we reviewed, the turmoil associated with the District's ADP employee turnover has begun to adversely affect their operations. The officials cited such problems as increasing difficulty in meeting operational deadlines, postponement of new computer applications, and difficulty in maintaining existing systems as all being attributable in full or in part to the personnel problems discussed previously. For example, Department of Human Services officials said they have had to turn down and delay requests for programming services because of insufficient training of personnel. Police officials said that the lack of training for junior staff has somewhat affected their ability to maintain continuity on software

systems when senior staff resign or retire. University officials said the lack of training has reduced their ability to carry out certain user requests and has lengthened the time necessary to complete projects that they do perform.

Similarly, the Mayor, in requesting the City Council to act favorably on the proposal discussed above to exempt ADP personnel from the residency requirement, pointed out that there were critical vacancies in these positions. He pointed out that several critical ADP operations could be seriously affected if the vacancies remained unfilled.

CONCLUSIONS

Several factors affect the District's ability to retain and recruit qualified staff. While a more aggressive recruiting program will help obtain the needed ADP personnel, career development programs and training programs would enhance staff management capabilities and would provide employees and prospective employees with a better understanding of what they could expect from a career with the District government. Similarly, in a high technology area such as automatic data processing, a well developed training program is necessary to recruit and retain staff, continue high quality operations, and exploit existing and developing technologies. In our opinion, the District government needs to develop a coordinated personnel management system which includes these elements.

RECOMMENDATIONS

We recommend that the Mayor of the District of Columbia direct the City Administrator to:

1. Establish career development programs that will identify careers, positions, and salaries; specific knowledge, skills, and abilities needed at each stage of the career ladder; alternative career paths for each type of employee; and the knowledge, skills, and experience required for advancement.
2. Establish training policies and programs for the various career paths to ensure an adequate supply of properly trained employees and to enhance the District's recruiting position.
3. Require District agencies to regularly prepare training plans and budgets for training consistent with current and future operational needs.

We also recommend that the University of the District of Columbia implement the recommendations listed above as appropriate with its status as an independent agency.

AGENCY COMMENTS AND OUR EVALUATION

The District government and the University of the District of Columbia agreed that their personnel management systems need strengthening. The D.C. General Hospital has a relatively small contingent of ADP personnel and has not experienced the problems discussed in this chapter. However, the Hospital said it would implement our recommendations to prevent such problems because it expects its ADP workforce to grow.

In commenting on our report, the City Administrator said the District government agreed with our findings and recommendations. He said, as we note on pages 21, 22, and 23, the District government has already initiated action to implement improvements for all District agencies under the control of the Mayor. The City Administrator added that he intends to establish a central ADP management office which should also improve ADP job opportunities in the District government.

The Chief of Management Services said the D.C. General Hospital concurred with our recommendations. He said the Hospital will comply with the recommendations on an independent agency basis.

The Director, Office of Internal Audit, said that the University concurred with our findings and recommendations but he said he could not confirm the accuracy of the numerical information presented in the chapter. Although he could not provide specifics on the corrective action, he said the University has already begun to plan and implement the improvements on an independent agency basis.

In our opinion, the actions taken to remove the residency requirement and intensify recruiting efforts are a step forward. We believe that these actions combined with career development and training programs will help alleviate personnel turnover problems and the resultant impact on ADP operations.

CHAPTER 5

EVALUATIONS OF ADP OPERATIONS ARE NEEDED

TO ENSURE THEIR RELIABILITY AND EFFECTIVENESS

The Office of the Inspector General should increase its reviews of internal controls of automated systems and begin evaluating ADP operations. Such efforts are necessary to ensure the accuracy and reliability of information processing and to assess the effectiveness of ADP support of District government and agency missions, programs, and activities.

The Inspector General has, over the past two years, performed audits and issued reports on different aspects of the computer-based Financial Management System. However, the Office has not performed comprehensive evaluations of the many other automated systems which directly support important District programs and services to the public. In spite of the fact that the District government's ADP activities support many important programs and activities, most of these mission-related activities have never been reviewed or evaluated by the Office of the Inspector General. Periodic reviews and evaluations of ADP operations and automated systems can do much to improve the accuracy and reliability of information and the efficiency and effectiveness of ADP support.

During the course of our work, we discussed with the Inspector General the need for reviews and evaluations of computer center operations, long-range planning, software development and maintenance, internal controls, contracting, performance management, and the application of good management practices. She agreed that evaluations in these areas are needed and expressed a desire to conduct such evaluations. The Inspector General said, however, it would be extremely difficult to undertake this work because of insufficient personnel and a past shortage of training funds.

The Inspector General told us that she had increased the amount of data processing training provided to the staff. In fiscal year 1981, 11 auditors attended audit-related training in various aspects of ADP. In fiscal year 1982, however, only two auditors are scheduled for a data processing training class.

CONCLUSIONS

The District government relies on ADP resources to support its many programs and functions. The Inspector General has not reviewed and evaluated these resources to ensure their efficient and effective acquisition, management, and use. The Inspector General has increased the level of training to improve staff knowledge and skills, but this level must be maintained.

We recognize the budget and staffing problems which face the District government and its agencies. We also recognize that ADP resources provide vital support to programs and to the delivery of governmental services. We believe that an effective audit function can greatly serve management by identifying opportunities to increase the economy, efficiency, effectiveness, and reliability of the District's ADP operations.

RECOMMENDATIONS

We recommend that the Mayor direct the Inspector General to:

1. Provide sufficient training to staff to ensure they have the knowledge and skills needed to evaluate ADP operations.
2. Periodically evaluate the economy, efficiency, and effectiveness of the city's ADP operations, computer centers, and automated systems.

AGENCY COMMENTS AND OUR EVALUATION

In commenting on our report, the City Administrator said the District government agreed with our findings and recommendations. He said the Inspector General has been increasing the ADP skills for existing audit personnel and is committed to a program of developing ADP audit specialists so that the city can evaluate its ADP operations.

We believe the Inspector General's actions to increase ADP skills for existing audit staff and the commitment to develop ADP audit specialists is a step forward. These actions and commitments must be vigorously pursued, however, to provide effective oversight of the city's ADP operations.

DISTRICT GOVERNMENT'SPLAN TO IMPROVE ADP OPERATIONS

Following is a list of the priority objectives and completion dates which were contained in the city administration's February 17, 1981, plan to improve automatic data processing operations. As discussed on page 5, we did not review the SHARE computer center's operations (item 1). As discussed on pages 8, 9, 17, 21, 22, and 23, the city is working to implement the actions planned in items 2 through 9, but they have not yet been completed.

1. Immediately improve the city's SHARE computer system availability (accessible time) to customers.
2. Develop a citywide inventory within 2 months which includes hardware (installed and on order), software (installed and on order), software development plans (backlog and underway), personnel plans, service and consultant contracts, cost data, and major management obstacles.
3. Implement a program for recruiting and retaining highly qualified ADP personnel within 3 months.
4. Establish an ADP advisory committee and ADP policy board to foster communications, problem resolution, planning, resource utilization, etc., within 3 months.
5. Develop and implement an executive ADP education program within 6 months.
6. Assess ADP applications, staffing, skills, hardware, and software to identify what the city has, determine whether it is needed, and determine what is needed to meet future requirements within 6 months.
7. Develop citywide and individual agency long-range ADP plans which cover people, hardware, software, and physical site within 6 to 12 months.
8. Develop and issue standards and procedures as citywide policy to include, but not be limited to, ADP hardware, software, communications, organization, personnel classification, training, procurement, quality control, resource performance, and evaluation criteria within 1 year.
9. Reduce the D.C. government's dependence on outside systems analysts, programmers, and operations personnel.

SUGGESTIONS OF THE COMMITTEE ON APPROPRIATIONS,
HOUSE OF REPRESENTATIVES, TO IMPROVE ADP OPERATIONS

Following is an excerpt from the report (No. 97-235, dated 9-17-81) of the Committee on Appropriations, House of Representatives. The report accompanied the fiscal year 1982 appropriations bill for the District of Columbia.

"* * * The General Accounting Office (GAO) has been looking into this question [management of the District of Columbia's automatic data processing resources] for approximately a year-and-a-half and has briefed the Committee on its investigation.

GAO finds that the District:

- does not have adequate planning for ADP,
- has few policies, standards, and procedures for systems development, contracting, and performance management, and
- has not established career development and training programs to help build personnel capabilities and to attract new, highly qualified employees.

The Committee believes that ADP within the District is essentially uncontrolled and that this inevitably leads to inefficient, costly, and error prone performance. The District has begun to control its ADP through the position of Special Assistant to the City Administrator for Information Systems and the Committee encourages these efforts, especially implementation of the action plan to improve ADP management and operation.

COMMITTEE SUGGESTIONS

In addition to these on-going efforts the Committee specifically suggests that the District:

- a. establish an annually updated long-range (3-to-5 year) ADP planning process at the overall District level and within each agency using ADP, which would include:
 - detailed descriptions of existing and proposed applications;
 - proposed actions on the applications and their costs and benefits;

- schedules for the various actions; and
- resource requirements needed such as personnel and equipment;
- b. establish a comprehensive ADP management process and related policies, standards, and procedures for software development, software maintenance, and software contracting. Included should be:
 - procedures for performing user need studies that ensure user involvement;
 - procedures to control and manage software changes; and
 - a system validation process;
- c. establish for ADP personnel, career development programs to include:
 - identifying knowledge, skills and abilities needed at each stage of the career ladder; and
 - establishing training programs which will allow for the development of appropriate skills consistent with the long-range ADP plan;
- d. strengthen the ability of the Inspector General's office to review and evaluate ADP against the highest standards of performance; and
- e. provide the necessary resources, including personnel, to the Office of the City Administrator to enable the accomplishment of the above objectives.

As part of its next budget request to the Committee, the District is directed to report on its progress in meeting the above suggestions. Further, the District should limit acquisition of any new ADP equipment until measurable progress has been made on the above.

COORDINATION WITH GAO

District officials should review with GAO its findings and recommendations in the ADP area. Subsequently, the City should -

- compile a complete inventory of hardware, support systems and software, applications, staff, and facilities;
- develop a consolidated budget analysis of financial resources dedicated to ADP;
- analyze the intra-district purchase of computer services, and the cost effectiveness of such budgeting;
- compile a manning chart for the city for all ADP operations in all agencies, including all positions established showing agency, position title, grade, and source of funding; and
- publish an annual ADP report to include a statement of current conditions, changes effected during the year, and a summary of future plans.

The Committee wishes to receive a copy of the annual report, manning chart, and budget analyses * * *."

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