

DOCUMENT RESUME

02432 - [A1672674]

[Computer Operations and Data Processing Activities at the Social Security Administration]. HRD-77-97; B-164031(4). June 3, 1977. Released June 6, 1977. 11 pp.

Report to Rep. William L. Armstrong; by Elmer B. Staats, Comptroller General.

Issue Area: Automatic Data Processing: User Requirements and Systems Specifications for Software (105); Automatic Data Processing: Design, Development, and Installation of Software (106); Automatic Data Processing: Acquisition of ADP Goods and Services (111).

Contact: Human Resources Div.

Budget Function: Miscellaneous: Automatic Data Processing (1001).

Organization Concerned: Social Security Administration.

Congressional Relevance: Rep. William L. Armstrong.

The primary responsibility of the Social Security Administration is to make correct and timely benefit payments to individuals entitled to receive various benefits under several Federal programs. The agency processes much of the necessary recordkeeping workload on specially designed electronic data processing systems, mostly located at agency headquarters. A congressionally requested analysis in 1975 indicated that the major causes of the apparent underuse included employee ignorance of computer capabilities, indifference to work, and lack of communication between different shifts, resulting in slowdown of operations when changing shifts. There was also a lack of workload sharing among the groups assigned to various programs, and the security system was weak. The agency has agreed that the broad question of computer use versus capacity still needs to be answered, and it has taken steps to study the situation and to improve its existing computer operations and security. These steps include hiring a consulting firm to analyze the systems practices and procedures, waiting until the analysis is complete before planning further computer development, hiring a systems expert to improve management and staffing, initiating overlapping shifts for computer operations personnel, adopting new security procedures, and funding a preliminary physical security evaluation. Findings/Conclusions: In responding to 1974 recommendations and a Presidential directive, the agency established the Advanced Operating Systems Staff, which has the responsibilities of modernizing the agency's approach to data processing and planning, designing, and overseeing implementation of a long-range overall agency process. The master plan developed by this staff has four phases: I, conceptualization; II, requirements definition; III, design and development; and IV, implementation. As of April 1977, Phase I had not been completed. Initial cost estimates indicate a total project expenditure for FY 1976-81 will be \$364

million in 1975 constant dollars. GAO considered this estimate to be low. Through March 31, 1977, the agency had spent almost \$4.5 million on its advanced systems project. (Author/SS)

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COMPTROLLER GENERAL OF THE UNITED STATES

WASHINGTON, D.C. 20548

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JUN 3 1977

B-164031(4)

The Honorable William L. Armstrong
House of Representatives

Dear Mr. Armstrong:

RESTRICTED — Not to be released outside the General Accounting Office except on the basis of specific approval by the Office of Congressional Relations

Your March 9, 1976, letter referred to computer and data processing activities at the Social Security Administration. You requested (1) an audit of current agency computer facilities usage, effectiveness, operating procedures, and costs and (2) a preliminary analysis of the need to spend an additional \$400 million for a new facility.

In May 1976, we advised your office that we hoped to respond to your request by late June. However, additional pertinent information on ongoing agency computer operations became available after our discussions with your office as a result of events occurring between June 1976 and January 1977. We believed this information should be included in our report to you and deferred issuing it until these events were concluded and had been fully analyzed. The first part of the report summarizes both this information and other pertinent data we have obtained concerning ongoing agency computer operations.

The \$400 million expenditure referred to in your letter pertains to the agency's long-term activities in planning a total redesign of its processes, including its automated data processing systems, to meet ever-increasing workloads. As you requested, we have obtained information on the agency's systems redesign activities to date.

ONGOING AGENCY COMPUTER OPERATIONS

Automated recordkeeping systems supporting the agency's mission

The primary responsibility of the Social Security Administration is to make correct and timely benefit payments to individuals entitled to receive various benefits under several Federal programs. These programs include the Retirement, Survivors, and Disability Insurance Programs (nearly 32.8 million beneficiaries were paid more than \$6.3 billion in October 1976);

the Supplemental Security Income Program (about 4.3 million recipients were paid \$507 million in October 1976); Aid to Families with Dependent Children 1/ (more than 11.1 million recipients were paid about \$831.6 million in October 1976); and a segment of the black lung benefits program 2/ (almost 472,000 beneficiaries were paid \$77.6 million in October 1976).

As of early March 1977, the agency had about 80,500 permanent, full-time personnel in its Baltimore headquarters; 6 program service centers and 10 regional offices in various parts of the country; and 1,313 district and branch offices nationwide to carry out its responsibilities. Program operations generate a huge recordkeeping workload centralized at agency headquarters. The agency processes much of this workload on specially designed electronic data processing systems, most of which are located at agency headquarters and the rest in the program service centers. The operations 3/ performed by these systems include establishing new Social Security numbers, computing program benefits, maintaining program beneficiary rolls, maintaining and updating individual lifetime earnings records for more than 175 million workers, and providing data processing support for the entire Medicare process. 4/

1/A major reorganization of the Department of Health, Education, and Welfare effective March 8, 1977, gave Social Security responsibility for administering Aid to Families with Dependent Children and transferred administrative responsibility for the Medicare program from Social Security to the newly created Health Care Financing Administration.

2/Social Security and the Department of Labor jointly administer the black lung benefits program. Social Security is responsible for processing and paying miners' claims filed through June 30, 1973, initial survivors' claims filed through December 31, 1973, and certain other survivors' claims. The Department of Labor is responsible for all other claims.

3/Does not include operations supporting Aid to Families with Dependent Children, which may eventually be performed on these systems.

4/As of mid-March 1977, Social Security was expecting to continue providing support functions, including data processing services, for the Medicare program.

In conjunction with these systems, the agency maintains a nationwide telecommunications network to permit rapid data exchange between district offices, regional offices, program service centers, and headquarters. This network speeds the processing of claims and the updating of benefit records.

Deficiencies in the agency's operation
of selected computer systems

Before January 1977, Social Security was processing most of the workload for its major programs on 17 large-scale computer systems. In response to a July 1975 request from the Chairman, Subcommittee on Intergovernmental Relations and Human Resources, House Committee on Government Operations, we analyzed how efficiently the agency has used these systems.

We measured the agency's use of 15 of the 17 computer systems for the 4 busiest days of computer operations during September 1975. According to agency records, September 1975 was the busiest month between July 1973 and January 1976 for these 15 systems (appropriate data for 2 of the 17 systems was not available). We compared the capacity used by each system with the demonstrated potential capacity available during the 4 days selected for review. Our analysis indicated that the 15 systems examined were capable of supporting more than twice the largest identifiable workload processed.

While observing agency systems operations, we noted certain practices and procedures that we believed were major causes of the apparent underuse of computers. We observed agency operations personnel displaying an apparent lack of knowledge of equipment capabilities and an indifference toward completion of necessary tasks. Communication seemed to be lacking between operations personnel on succeeding shifts. For example, we regularly observed these personnel stopping the systems while changing shifts, resulting in the inefficient use of processing time.

From an organizational view, each computer group is generally dedicated to one or few major tasks, such as processing supplemental security income workloads or operating the telecommunications network. Groups virtually never share work, although one group may be extremely busy while an adjacent group is idle. In addition, the security system for the existing operation had certain weaknesses.

We first conveyed these findings to the Commissioner of Social Security and his executive staff during a March 18, 1976, briefing. We described in detail how we measured the agency's systems use and restated our findings in a March 26, 1976, letter to the agency. We discussed our findings with agency technical personnel on April 14, 1976.

Social Security considers our analysis only an indicator of possible underuse of computer equipment. It believes our analysis was not sufficiently conclusive to be used as a basis for making final decisions on equipment or facility procurements. The agency, however, has agreed that the broad question of computer use versus capacity still needs to be answered, and it has taken steps to study the situation and to improve its existing computer operations and security. These steps include:

1. Hiring the MITRE Corporation, a Federal contract research center which provides services only for the Government and other nonprofit institutions on a selective basis, to make a comprehensive analysis of agency computer usage patterns and practices. (The agency expects that this study will also identify any further major computer equipment needs. MITRE began collecting data on agency systems in December 1976 under a contract with the agency signed on November 11, 1976. At the request of the Chairman, Subcommittee on Oversight, House Committee on Ways and Means, we will be monitoring the progress of the MITRE study, which is expected to require 14 months to complete.)
2. Agreeing to suspend all specific planning for further computer acquisitions pending the results and conclusions of the MITRE study. (The agency's January 1975 plan for acquiring large-scale computer systems during fiscal years 1976-80 had called for the acquisition and installation of four systems in each of fiscal years 1976, 1977, and 1978. In following this plan Social Security acquired the four systems planned for fiscal year 1976 at a cost of more than \$21.3 million. Operation of these systems requires an additional expenditure of \$1.9 million per year to lease peripheral equipment. As a result of our review, however, Social Security stated in January 1977 that it now considers its 5-year plan obsolete. Accordingly, the agency has reprogramed \$29.4 million appropriated for acquisition of the four additional large-scale computers and related peripheral equipment

planned for fiscal year 1977 to fund increased personnel costs. In addition, the agency has included no funds in its fiscal year 1978 appropriations estimate for acquiring additional computer systems, although preliminary budget data contained provisions for acquiring the four additional systems planned for fiscal year 1978. Based on that prior data, we estimate that this equipment would have cost at least \$28.7 million. The agency hopes to have analyzed the results of the MITRE study in time to include in the fiscal year 1979 budget whatever systems acquisitions it indicates are necessary.)

3. Hiring a computer systems expert to improve systems management, staffing and development. (Dr. Herbert Maisel, former Director of the Academic Computation Center at Georgetown University, became a full-time agency employee on September 1, 1976, and is serving as the agency's project officer for the MITRE analysis.)
4. Initiating overlapping shifts for computer operations personnel to eliminate the stopping of equipment during shift changes and improve communications among employees on different shifts. (This change went into effect for about 350 operations personnel on June 28, 1976.)
5. Adopting new security procedures designed to restrict access to the computer area.
6. Funding a preliminary physical security evaluation of its computer facility which recommended actions for correcting security weaknesses.

AGENCY'S MASTER PLAN TO
REDESIGN ITS PROCESSES

Prior GAO recommendations and
presidential directive

In April 1974, we reported that the redesign of information processing systems at Social Security offers potential for improving the efficiency of agency operations. 1/ We recommended that the agency

1/Report to the Congress entitled "Increased Efficiency Predicted If Information Processing Systems of Social Security Administration Are Redesigned" (B-164031(4), Apr. 19, 1974.)

- establish long-range goals and objectives to guide the system designers in integrating functions of different offices and bureaus;
- establish an expert system planning group, freed from changes caused by day-to-day operations and legislative changes, to design and develop new information processing systems which will take full advantage of the technological capabilities of modern computers; and
- direct the system designers to make an indepth examination of alternative methods for storing, maintaining, and processing agency data files and programs--methods that are operationally beneficial and technically feasible.

The Department of Health, Education and Welfare concurred in these recommendations and indicated that Social Security had begun to implement them. In mid-November 1974, the Department advised the President that Social Security was planning a complete redesign of its claims and payment systems, based on projected technological advances being developed by the computer industry, to significantly reduce manual processing and increase the overall capability and processing speed of the system. In late December 1974, the President directed that the agency use advanced technology to develop a new process featuring the best possible automatic data processing system.

In responding to our recommendations and the President's directive, Social Security established the Advanced Operating Systems Staff in April 1975. This staff, now the Office of Advanced Systems, reports directly to the Commissioner of Social Security and has been charged with identifying the best ways of doing the agency's work. It has the responsibility to modernize the agency's approach to data processing and to plan, design, and oversee implementation of a long-range overall agency process--the administrative mechanism consisting of various technological, managerial, and operational components which the agency uses in carrying out its mission--that will be responsive to the future needs of the agency. These responsibilities include planning and developing new agency automated data processing systems. In this regard the Office of Advanced Systems completed preparation of its "Master Plan for the Development of the Future SSA [Social Security Administration] Process" in June 1975.

The agency first advised the Senate and House Appropriations Committees of the Office of Advanced System's establishment and its systems redesign responsibilities in February and March 1976, respectively.

Provisions of the Master Plan

The basic goal of the redesign effort, as described in the Master Plan, is to design and develop a process which will serve the agency through the 1980s and which will maximize efficiency, curtail increasing personnel requirements and administrative costs, improve service to the public, and maximize use of the most advanced technology. The plan also includes specific objectives, such as reducing manual effort by automating various manual processes.

According to the Master Plan, the advanced systems project will be a 6-year effort--from July 1975 to June 1981--consisting of four overlapping phases:

- Phase I - Conceptualization (months 1 through 15)
- Phase II - Requirements Definition (months 10 through 25)
- Phase III - Design and Development (months 22 through 58)
- Phase IV - Implementation (final 27 months)

The Conceptualization Phase is to begin with a detailed examination of the kinds and levels of services the agency provides and the best way to provide these services. Simultaneously, alternatives for deploying agency resources are to be developed, and the technology needed to support the new process is to be assessed. A thorough cost-benefit analysis of major alternatives is to be made to permit selection of the most appropriate tradeoffs between various levels of service and the resources required to achieve them. These activities are to be described in a Recommended Concept document, the major product for the Conceptualization Phase, according to the Master Plan. After appropriate review and approval, that document is to serve as the basis for the developmental work to follow.

During the Requirements Definition Phase, the products of the first phase are to be translated into descriptions of specific work processes, and necessary additional hardware and software requirements to support those processes are to

be identified and procurement is to be initiated. During the Design and Development Phase, the performance specifications are to be expanded into detailed design specifications and, later, into specific support systems and application programs. Also, contracts are to be awarded for the development of hardware and software needed to implement the newly designed systems and communications networks. Implementation, the final phase, is to feature hardware and software installation and testing (the existing and redesigned systems are to be operated simultaneously so that the new system can be thoroughly tested with minimum disruption to ongoing operations); software validation; phasing of systems and communications network operations into the ongoing operations; required staff retraining; and organizational realignments necessary for continuing operation of the new processes.

Current project status

Conceptualization activities began as scheduled in July 1975, and as of late April 1977, this phase of the project was almost over. Phase I was not completed by September 1976, the estimated target date specified in the Master Plan, and was not expected to be completed until May 1977 or later. According to Office of Advanced Systems personnel, substantive work on Phase II had not begun, although certain preliminary tasks had been undertaken and that phase had been retitled Requirements Definition and General Systems Redesign.

The end of the Conceptualization Phase is to be marked by the approval of a final Phase I report describing a final design concept which can serve as the framework for the future process. The agency completed a preliminary version of this report in September 1976 but did not make it available to us for review because it was subject to revision. In January 1977, the agency advised us that it was continuing further analysis of its preliminary design concept and was planning to incorporate these results into the final Phase I report. As of late April 1977, the Office of Advanced Systems had almost completed the final report and was preparing to submit it to the Commissioner of Social Security and the Secretary of Health, Education, and Welfare for review and approval. Final approval by those officials, however, was not expected until May or later.

Initial cost-benefit estimates

In the Master Plan the agency estimates that total project costs incurred during fiscal years 1976-81 will be \$364 million in 1975 constant dollars, with most of the total expenditures occurring during fiscal years 1979-80. Two-thirds of the total (\$250 million) represents data processing equipment costs, one-quarter (\$94 million) is related to personnel, and the rest generally relates to utilities, communications, and transportation costs. Social Security advised us in mid-January 1977 that these cost estimates had not changed, but that changes could occur as a result of additional detailed analysis being undertaken.

The Master Plan refers to a previous agency plan to spend an estimated \$603 million (\$563 million in equipment costs and \$40 million in personnel costs for systems development) to maintain and upgrade agency systems during fiscal years 1976-81. Of this total, \$219 million is identified by the Master Plan as part of the total estimated project costs which would have been spent on the existing systems under the previous plan. According to the plan, therefore, the net additional cost to carry out the project is only \$145 million (\$364 million less \$219 million).

The agency indicates in the Master Plan that the project will reduce personnel and file space costs, increase operational efficiency, and reduce unrecovered program benefit overpayments. According to the plan, resulting savings during fiscal years 1981-85 will total \$900 million to \$1 billion, a return on investment of more than 500 percent.

Because the agency indicated that project cost estimates contained in the Master Plan could change before being finalized in the detailed cost-benefit analysis to be included in the final Phase I report, we did not undertake a detailed evaluation of the adequacy of cost-benefit estimates presented in the plan. We believe, however, that the project cost estimates specified in the plan may not reflect the project costs ultimately incurred. In our November 23, 1976, report to the Congress entitled "A Proposed Automated Tax Administration System for Internal Revenue Service--An Evaluation of Costs and Benefits" (LCD-76-114), we noted that, according to recent computer industry studies and the experiences of other Government agencies, the cost to develop software--essentially personnel costs--greatly exceeds the cost of computer equipment.

This would suggest that the ratio of personnel costs to equipment costs as expressed in the Master Plan (\$94 million in personnel costs, \$250 million in equipment costs) could be substantially understated. Either an understatement of personnel costs or an overstatement of equipment costs, or a combination of both, could produce this apparently low cost ratio.

The MITRE analysis, which apparently will determine what additional major equipment acquisitions will be required to maintain and upgrade the current process, may also affect the costs of the advanced systems project. The Master Plan states that the advanced systems project "will require no more costs for computer capacity than that projected for central office systems under the current SSA processes." Major changes to current systems resources or configurations resulting from the MITRE analysis could, therefore, significantly change cost projections for the advanced systems project and would have to be taken into account by the agency in implementing the project.

In late December 1976 we requested the agency to comment on the relationship between its advanced systems project and the MITRE analysis. The agency responded in January 1977 that if changes occur to existing computer operations either as a result of the MITRE analysis or for any other reason, these changes will be reflected in its planning for the eventual transfer of operations to the redesigned automated systems.

Project costs incurred

Through March 31, 1977, Social Security has spent almost \$4.5 million on its advanced systems project, mostly on personnel costs. According to agency sources in April 1977, the seven-member team initially assigned to the advanced systems project has increased to 87 staff members of the Office of Advanced Systems.

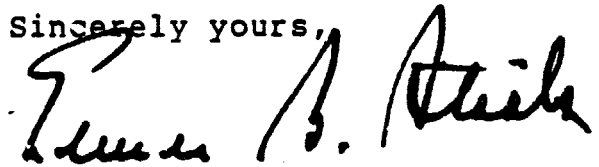
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We plan to continue reviewing data processing activities at Social Security. Our ongoing monitoring effort directed at the MITRE analysis and periodic inquiries regarding the status of the advanced systems project should enable us to keep abreast of the latest developments in the agency's attempts to improve its data processing operations.

B-164031(4)

We plan to send copies of this report to the Director, Office of Management and Budget; the Secretary of Health, Education, and Welfare; the Commissioner of the Social Security Administration; and certain congressional sub-committees which have expressed continuing interest in our reviews of agency computer operations. At the request of your office, however, we will not distribute copies to these parties until after your office has had time to analyze the report.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Thomas A. Atch". The signature is written in a cursive style with a large initial 'T' and 'A'.

Comptroller General
of the United States