BY THE U.S. GENERAL ACCOUNTING OFFICE

Report To The Secretary Of Health And Human Services

Social Security Needs To Better Plan, Develop, And Implement Its Major ADP Systems Redesign Projects

The Social Security Administration undertook a major project to redesign the computerized system it uses in administering the Retirement, Survivors, Disability, and Health Insurance programs. Although substantial effort and resources were invested in this project, it was largely unsuccessful. Deficiencies in redesigned computer programs resulted in many beneficiaries receiving incorrect benefit payments and confusing payment notices.

Inadequate planning and management of the project and deficiencies in Social Security's system modification process were primary reasons that it was not successfully completed. These weaknesses apparently occur throughout Social Security's computerized systems.

This report discusses the problems Social Security encountered on this systems redesign project and contains recommendations to the Secretary of HHS to correct them.

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GAO
United States General Accounting Office
Washington, DC 20548

Human Resources
Division

B-201668

The Honorable Richard S. Schweiker
The Secretary of Health and Human Services

Dear Mr. Secretary:

This report discusses problems the Social Security Administration encountered in attempting to redesign its Retirement, Survivors, Disability, and Health Insurance computerized system. It contains recommendations to improve the design, development, validation, and implementation of changes to Social Security's automatic data processing systems so that these systems can better serve program beneficiaries.

This is the fourth in a series of reports--three issued to your Department and one to Social Security--resulting from our review of major automatic data processing activities at the agency, as requested by the Chairman, House Committee on Government Operations. Our fifth and final report, to be issued to the Chairman, will not only summarize the major findings, conclusions, and recommendations developed during our overall review, including those presented in our four prior reports, but also discuss the actions taken by the Department and Social Security to implement our recommendations.

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

We are sending copies of this report to the Chairmen of the four above-mentioned Committees; the Senate Committee on Finance; the House Committee on Ways and Means and its Subcommittee on Social Security; the Senate Appropriations Subcommittee on Labor and Health and Human Services; and other interested committees and subcommittees. Copies are also being sent to the Director, Office of Management and Budget; your Inspector General; and the Commissioner of Social Security.

We appreciate the cooperation and assistance given by Social Security personnel and would like to be periodically informed of the progress made to implement our recommendations.

Sincerely yours,

Gregory J. Ahart
Director

GENERAL ACCOUNTING OFFICE
REPORT TO THE SECRETARY OF
HEALTH AND HUMAN SERVICES

SOCIAL SECURITY NEEDS TO BETTER PLAN, DEVELOP, AND IMPLEMENT ITS MAJOR ADP SYSTEMS REDESIGN PROJECTS

D I G E S T

In response to a request from the Chairman, House Committee on Government Operations, GAO reviewed the Social Security Administration's (SSA's) efforts to redesign its Retirement, Survivors, Disability, and Health Insurance automated system. This Redesign represented a major multifaceted automatic data processing (ADP) system modification project undertaken to improve service to program beneficiaries. (See pp. 4 to 6.)

However, although substantial effort and resources were invested in this project, it was largely unsuccessful. Only one of the five major new features expected during the Redesign was fully implemented successfully, and SSA suspended further efforts to complete the project as it was originally planned.

GAO believes that inadequate planning and management of the Redesign and deficiencies in SSA's system modification process were primary reasons that the agency was unable to fully complete the Redesign. These problems are similar to deficiencies GAO cited in prior reports discussing other ADP systems activities at SSA, which, in GAO's view, indicates that these weaknesses occur throughout the agency's ADP systems.

GAO believes that SSA's systems modification efforts in general will not meet their objectives until these weaknesses, which initially impeded successful implementation of the Redesign, are corrected. Accordingly, SSA should take whatever actions are necessary, including additional efforts to expedite and fully comply with prior GAO recommendations,

to resolve these deficiencies before resuming work on major ADP systems changes.

Specifically, SSA did not:

--Adequately involve key field office users in planning Redesign changes to ensure that their needs would be met by the modified system. (See pp. 8 to 11.) Although SSA has taken initial steps since its 1979 structural reorganization to involve users more in all aspects of the system development/modification process, GAO does not believe these steps will achieve the degree of user involvement needed for successful implementation of major systems changes. (See pp. 11 to 14.)

--Adequately analyze costs and benefits of the Redesign. (See pp. 14 to 17.) SSA failed to account for all required ADP equipment and personnel costs in its cost/benefit analysis, and it never updated either the costs or savings data, despite substantial changes as the Redesign proceeded. This precluded SSA management from using these data in monitoring Redesign progress and determining whether the Redesign should be continued.

--Provide for consistent management of the Redesign, as evidenced by the agency's combining Redesign activities with day-to-day systems operations, contrary to basic systems organizational concepts discussed in prior GAO reports. (See pp. 17 to 19.)

In addition, contrary to established system development/modification criteria, SSA failed to adequately validate major systems changes before beginning to implement them, and the Department of Health and Human Services' internal auditors never audited them. (See ch. 3.)

In attempting to validate a series of major systems changes designed to increase and improve automated processing of program benefit claims and postentitlement actions, SSA (1) did not select program test cases adequately (see pp. 21 to 23), (2) failed to fully perform validations throughout the entire system (see p. 24), and (3) began implementing the changes prematurely (see pp. 24 and 25).

Consequently, significant system deficiencies were not detected and corrected, resulting in many social security beneficiaries receiving incorrect benefit payments and confusing payment notices. (See pp. 26 to 30.) SSA field offices had to spend considerable staff time helping beneficiaries resolve these payment and notice deficiencies. (See pp. 30 and 31.)

GAO believes these validation shortcomings and the resulting case processing deficiencies occurred primarily because SSA (1) had not developed formal validation standards and procedures, (2) may not have allocated enough staff time to testing system changes, (3) failed to ensure that the validation group could control all program and system modifications, and (4) had not established adequate system performance criteria upon which to base validations. (See pp. 32 to 34.)

During 1980 the agency issued interim validation guidelines and revised standards for helping users establish system performance requirements, but these criteria had not been in effect long enough for GAO to measure their effectiveness.

SSA appears to have appropriately directed the Redesign toward improving the processing of time-consuming and error-prone benefit program operations, and GAO identified certain system improvements--some already realized--associated with it. (See pp. 36 to 42.)

SSA field office personnel GAO interviewed generally continued to favor the Redesign concept, despite the problems caused field offices by the improper development and largely unsuccessful implementation of certain Redesign changes. (See pp. 42 to 44.)

Thus, in GAO's view, the Redesign--if properly planned, developed, and implemented--could further improve agency service to the public. In failing to successfully complete the Redesign, SSA not only missed an excellent opportunity to provide better service, but also expended substantial resources unnecessarily.

The Secretary of Health and Human Services should direct the Commissioner of Social Security to assure that major systems development/modification efforts, such as the Redesign, are planned, developed, validated, and approved before implementation in accordance with generally accepted systems development/modification criteria. Specifically, the Commissioner should require:

--Quick finalization and implementation of detailed agency procedures for communicating with system users.

--Periodic updating, including revision of priorities, of the existing inventory of user needs to make sure it is current and accurate and can serve as a reliable basis for future development of system modification proposals.

--Periodic updating and modification of initial cost/benefit analyses for all major systems proposals, maintenance of accurate records of costs incurred and benefits realized to facilitate this updating, and use of these data to periodically reevaluate the merit of proceeding with the system change.

--Provision for project leaders of major systems development/modification efforts to be assigned full time to managing such projects and conducting them apart from daily systems operations.

--Revision of SSA's interim validation guidelines to include more detailed procedures and standards covering test case selection and inclusion of invalid data for testing program controls, testing changes throughout the system, determining the degree of processing accuracy that must be attained before implementation may proceed, and allocating sufficient staff time to validating system changes.

--Assessment of the independence maintained by systems validators from systems development staff, to make sure that they have sufficient control over program and systems changes, especially seeing that formal validation procedures are followed.

--Participation by all users in establishing the functional requirements for proposed systems changes to ensure that these requirements can serve as the system performance criteria against which validation is conducted.

The Secretary should also direct the Inspector General to increase efforts to establish sufficient ADP audit capability within the Audit Agency so that reviews of SSA's system development/modification process and ADP systems audits can be carried out effectively at SSA.

Contents

ABBREVIATIONS

ADP	automatic data processing
GAO	General Accounting Office
MBR	Master Beneficiary Record
RSDHI	Retirement, Survivors, Disability, and Health Insurance
SSA	Social Security Administration

CHAPTER 1

INTRODUCTION

The Social Security Administration's (SSA's) primary responsibility in administering its benefit programs is providing prompt and meaningful service--including timely and accurate benefit payments--to the public. The quality of that service depends largely on how well the agency's automatic data processing (ADP) systems function in supporting its daily operations. Significant deficiencies in these systems during the last several years have caused erroneous program benefit payments totaling many millions of dollars, inaccurate data in automated program beneficiary records, and inaccurate notices to beneficiaries regarding their benefit status. These problems have stimulated concern by the public and by Members and Committees of Congress.

In response to congressional requests, we have reviewed the design, development, modification, and operation of several of SSA's primary ADP systems, including the Supplemental Security Income system and the Retirement, Survivors, Disability, and Health Insurance (RSDHI) system. We reported the results of our Supplemental Security Income system review in two reports to the Secretary of Health, Education, and Welfare. 1/ We found that SSA did not (1) adequately involve key field office users in planning system changes or (2) properly validate system changes before implementing them. In addition, the Department's Audit Agency had neither (1) participated in the design and development of the computerized system nor (2) reviewed the automated controls placed in the system.

This report discusses the results of our review of SSA's efforts to redesign the RSDHI automated system. The review was requested by the Chairman, House Committee on Government Operations, based on his concern that SSA's

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1/"Flaws in Controls Over the Supplemental Security Income Computerized System Cause Millions in Erroneous Payments" (HRD-79-104, Aug. 9, 1979).

"The Social Security Administration Needs To Develop a Structured and Planned Approach for Managing and Controlling the Design, Development, and Modification of Its Supplemental Security Income Computerized System" (HRD-80-5, Oct. 16, 1979).

failure to successfully implement major ADP systems initiatives would be extremely costly while undermining the agency's ability to fulfill its mission to the public. The Chairman directed us to make an extensive investigation of SSA's total system development plans. We identified the RSDHI Redesign as a major SSA systems initiative to be analyzed. Other agency systems activities we reviewed in response to the Chairman's request are discussed in three other reports--two issued to the Secretary of Health, Education, and Welfare 1/ and the other to the Commissioner of Social Security. 2/

Our primary objectives in reviewing the Redesign were to determine whether it was warranted and whether it was characterized by significant system development/modification deficiencies similar to those identified during our review of the Supplemental Security Income system. Although the Redesign appears to have been properly directed toward solving RSDHI system problems, it had deficiencies similar to those identified in our earlier review, leading us to conclude that they represent agencywide system development/modification problems. This report presents recommendations for correcting these deficiencies and other management weaknesses we identified.

THE SOCIAL SECURITY PROGRAM

The Social Security Act (42 U.S.C. 301 et seq.), enacted in 1935, established one of the world's largest insurance programs. Nine out of 10 American workers--more than 110 million people--pay social security taxes to fund key social insurance programs established by the act and related laws. These programs--Retirement and Survivors Insurance, Disability Insurance, and Health (hospital and medical) Insurance for the aged and the disabled--have the basic objectives of providing (1) an income for taxpayers and their dependents when the taxpayers' earnings are curtailed or stopped because of disability, retirement, or death and (2) comprehensive health insurance protection to the aged,

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1/"The Social Security Administration Needs To Continue Comprehensive Long-Range Planning" (HRD-79-118, Sept. 20, 1979).

Letter report to the Secretary of Health, Education, and Welfare questioning certain aspects of the proposed computerized National Recipient System (HRD-79-88, May 29, 1979).

2/"Improving Social Security Administration Procedures for Acquiring ADP and Telecommunications Resources" (Mar. 31, 1980)

disabled, and those suffering from chronic kidney disease. The Department of Health and Human Services 1/ has overall responsibility for administering these programs.

Retirement, survivors, and disability insurance benefits in fiscal year 1979 totaled $101 billion--an 11-percent increase over 1978. Benefits paid to 30.1 million retirement and survivors insurance beneficiaries rose to $87.6 billion, and benefit payments to 4.8 million disability insurance recipients totaled $13.4 billion. In addition, over $28 billion in hospital and medical insurance payments were made on behalf of more than 16 million health insurance beneficiaries.

SSA'S RESPONSIBILITIES, ACTIVITIES, AND STRUCTURE

Within the Department of Health and Human Services, SSA has direct administrative responsibility for the Retirement and Survivors Insurance and Disability Insurance programs. In 1977 the Health Care Financing Administration relieved SSA of administrative responsibility for the Health Insurance program. Nevertheless, SSA has continued to provide major operational support to that program, primarily in the form of ADP services and use of its extensive network of field offices to serve beneficiaries.

In administering these programs, SSA handles enormous workloads and delivers a wide range of services to the public. Although SSA provides more than 400 individual services, the following broad categories of services generally describe the bulk of SSA's workload: (1) assignment and maintenance of social security numbers, (2) earnings records maintenance, (3) claims processing, (4) postentitlement event processing, (5) payments and settlements, (6) appeals, (7) services for and from other agencies, and (8) general inquiries and information.

To deliver these services, SSA has about 75,000 full-time permanent employees in its Baltimore headquarters and field offices throughout the country. The field offices include 10 regional offices, over 1,300 full-time district and branch offices serving the public in their local communities, and six program service centers. These service

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1/Effective May 4, 1980, a new Department of Education was established, and the remaining components of the Department of Health, Education, and Welfare became the Department of Health and Human Services.

centers review claims prepared by district and branch office personnel, certify retirement and survivors insurance benefit payments, and maintain beneficiary records.

SSA's ADP operations, centrally located at its headquarters, serve a crucial supporting function for SSA-administered programs. SSA carries out daily program operations on 18 large-scale computer systems and a number of medium-to-small-scale special-purpose computers used to perform a wide variety of tasks, ranging from microfilm production to communication network control. SSA also maintains an extensive nationwide communications network giving field offices access to automated beneficiary data stored in the headquarters computer complex. Thus, the quality of SSA's service to the public depends largely on how well its ADP systems operate.

BACKGROUND ON THE RSDHI REDESIGN

The RSDHI system is an ADP system used to maintain records for all RSDHI beneficiaries and to process initial program benefit claims, postentitlement actions, and other transactions affecting those records. An essential record maintained by the system is the Master Beneficiary Record (MBR), which contains for each beneficiary the basic account, benefit, and payment data necessary to issue benefit checks. Over the years, however, several significant operational deficiencies have hampered the RSDHI system's overall effectiveness. Among these are (1) system limitations, which precluded reducing response timelags and automating substantial manual functions and computations, (2) inadequate software modification, which allowed major processes to become large, cumbersome, and inflexible, and (3) inability to provide SSA field office personnel with timely access to centrally stored and processed beneficiary data.

History of the Redesign

In mid-1974, SSA's Commissioner approved a proposal authorizing agency systems personnel to redesign the ADP systems supporting RSDHI processes. These personnel undertook an extensive examination of then-existing ADP processes, and in June 1974 they finalized the broad system design philosophies intended to guide detailed system design and implementation planning. Using these basic conceptual design plans, they developed and implemented several system improvements during the following 2 years.

Despite successful implementation of these improvements, SSA felt that the lack of a consolidated approach to system development was hampering overall RSDHI system effectiveness; the large number of independently developed, overlapping systems projects complicated the planning and management of developmental activities. Thus, in October 1976, after re-examining their earlier redesign effort in relation to other developmental activities supporting RSDHI processes, SSA systems personnel formally established the Redesign project to consolidate RSDHI systems development efforts.

The Redesign represented a major overhaul of existing computerized case processing capabilities, under which SSA established a limited number of system improvements as basic Redesign objectives. Each objective was assigned a relatively short-range target date for implementation, and Redesign activities were to be geared toward selecting alternatives that would enable these objectives to be realized by the specified dates. SSA designated a project manager for the Redesign and established several small teams to assist him with RSDHI system modification planning, design, and coordination activities. Actual software development was to remain the responsibility of systems operations personnel. SSA described the Redesign's scope, objectives, requirements, timing, individual projects, and expected impact in its May 1977 "Functional Requirements Document," which also contained a development plan for the use of developers and users. SSA revised the development plan in September 1977, July 1978, and November 1978.

SSA expected the RSDHI Redesign to improve service to the public by increasing both the timeliness and accuracy of case processing activities and to substantially reduce personnel costs through the automation of required manual actions. The Functional Requirements Document outlined 10 major categories of individual systems changes planned by SSA--5 representing improvements to existing systems capabilities and 5 representing new capabilities. The major new features included:

--Implementing the automated job stream, the principal transaction processing segment, which involved new software combining about two dozen RSDHI application subsystems and designed to expand benefit rate determination capabilities while linking the processing of various claims and postentitlement transactions into one logical operation.

--Expanding the online RSDHI data base to include certain data from the MBR and several other records and benefit estimate data, thus improving data retrieval capabilities needed by field personnel.

--Using mass storage and microfilm technology to retain complete transaction history data, eliminating the need to produce hard-copy documentation of transaction history filed in individual claims folders.

--Developing new software designed to perform several updating functions, such as preparation of updated MBR data for delivery to the RSDHI online data base.

--Developing new software to direct interrelated transaction control functions, such as input editing and management information collection, through interaction with the online data base.

Current status of the Redesign

Although the RSDHI Redesign was scheduled to be completed by December 31, 1978, SSA had not fully implemented many of the planned individual systems changes at the time of our review, and some of those which had been implemented were not successful. (See ch. 3.) As of November 1980, only one of the five major new features discussed above--expanding the online data base to include such information as summary MBR data and benefit estimate data--had been substantially implemented with success.

During our review, SSA reassigned the Redesign project manager to other duties and disbanded the user liaison committee, originally formed to communicate user comments to Redesign management. Work on key Redesign activities, although only partially completed, was suspended, and SSA was reevaluating resumption in light of time and resource constraints and changing agency priorities. As of November 1980, SSA was planning to resume work on certain Redesign-related systems enhancements during fiscal years 1981 and 1982. However, sources within the agency indicated that a renewed SSA commitment to pursuing Redesign activities would be required before they could be resumed.

Lack of systematic planning and consistent management of the Redesign and deficiencies in SSA's system modification process--discussed in chapters 2 and 3--appear to be the primary factors that precluded completion of the Redesign.

OBJECTIVES, SCOPE, AND METHODOLOGY

We made our evaluation of the RSDHI Redesign at SSA headquarters and the following field offices:

--The Kansas City Regional Office and Mid-America Program Service Center, Kansas City, Missouri.

--The Southeastern Program Service Center, Birmingham, Alabama.

--The Atlanta Regional Office, Atlanta, Georgia.

--Local offices in Kansas City and Independence, Missouri, and in Atlanta, East Point, and Decatur, Georgia.

We examined various documents, correspondence, and reports about the Redesign to determine the scope, objectives, and anticipated and actual results of individual systems enhancements making up the total project. In addition, to obtain comments about the usefulness of the project and the management of Redesign activities, we discussed individual Redesign efforts with knowledgeable personnel at various levels in the agency.

In developing our findings, conclusions, and recommendations, we compared information on procedures SSA used to manage the Redesign with generally accepted systems development/modification criteria, as discussed in enclosure II of our October 16, 1979, report on the Supplemental Security Income computerized system. (See note on p. 1.)

CHAPTER 2

RSDHI REDESIGN SUFFERED FROM LACK OF SYSTEMATIC PLANNING AND CONSISTENT MANAGEMENT

As noted in our October 1979 report on the Supplemental Security Income system and in earlier reports, planning the development or modification of an ADP system involves following a series of sequential steps, each of which must be completed before the next can begin. First, the users are to define the needs and objectives to be met by the system, which systems analysts use to develop conceptual system designs. Once these design alternatives are found to be technically and operationally feasible, a cost/benefit analysis is needed to identify the particular system or modification proposal which should produce the desired results most economically. After reviewing the results of these planning steps, the users should decide whether and when to proceed with detailed development of the selected system design. Throughout these activities responsible communications among users, systems analysts, programers, and management--such as the sharing of information on the status of system development--should be promoted.

In planning the RSDHI Redesign, however, SSA did not sufficiently involve users (particularly its field offices) and failed to adequately measure project costs and benefits, thus inhibiting the development of key data needed for determining proper system design and monitoring system development/modification progress. During the Redesign, SSA never achieved adequate user involvement or complete, up-to-date cost/benefit comparisons. As discussed in chapter 1, many of the individual system changes planned for the Redesign were not completed. In our view, it is doubtful that these changes--even if completed--would have met actual user needs, and some may not have been cost beneficial. The lack of consistent SSA management of the Redesign apparently contributed substantially to these planning and monitoring weaknesses.

KEY USERS NOT SUFFICIENTLY INVOLVED

The first step in planning the development or modification of an ADP system is for the user to identify the need for the system or change. Because the user is also responsible for making sure that this need and related objectives are achieved by the final operational system, he or she must

actively participate in all phases of system development. The user should always be the final authority on whether the system meets his or her needs. Thus, it is the user who is responsible for deciding whether and when to proceed on to the next stage of system development, including the final decision to implement the system. However, field users of SSA's ADP systems generally were not adequately involved in the planning and design of RSDHI Redesign projects and often were not kept up to date on the development status of individual projects, even though the systems changes making up those projects directly affected their operations.

Field users not adequately involved

Although key Redesign projects were validated and/or pilot tested in the Mid-America and Southeastern Program Service Centers and thus directly affected RSDHI claims and postentitlement activities at the centers and at certain local offices, in only one instance did field office users play a significant role in the planning and design of a Redesign project--the accelerated claims project, discussed below. Instead, most of the input to the Redesign came from program bureau systems analysts at the central office rather than from personnel at the program service centers and local offices, where most beneficiary services are provided, or from regional office staff, who are most familiar with common systems problems and needs in local offices. A user liaison committee--composed of central office program bureau representatives--was formed to plan and evaluate Redesign actions, coordinate problem resolution, and communicate user comments to project management. This committee, however, did not actively solicit field user comments or disseminate information about Redesign activities.

Limited regional office involvement

Regional office personnel in Atlanta and Kansas City agreed that they generally were not given the opportunity to provide input to the design of individual system projects. SSA's Atlanta Regional Office did play a major role in planning, designing, and implementing one element of the RSDHI Redesign, the accelerated claims project--a systems change designed to allow local office personnel to process benefit claims more quickly. Initial planning and design of all other Redesign projects, however, was done exclusively by central office personnel before soliciting regional office input, according to Atlanta and Kansas City regional staff. They

added that their regional offices received drafts of proposed systems from headquarters for comment, but only after the plans had been formulated.

Regarding their ongoing knowledge of individual projects once undertaken, personnel in the Atlanta and Kansas City Regional Offices indicated that from time to time headquarters had provided them with information on the status of Redesign projects.

Inadequate program service center involvement

Staff of SSA's Southeastern Program Service Center in Birmingham and Mid-America Service Center in Kansas City told us they had no involvement in the initial planning and design of individual Redesign elements and generally were not kept informed about the status of projects. No formal input for project planning purposes was solicited from the service centers, although, according to the Redesign project manager, field users were asked for their opinions on projects informally. In this regard, an operations official at one service center we visited acknowledged that on several occasions central office personnel visited the center to obtain such opinions from service center officials once the systems design was completed, but noted that service center personnel were not given an opportunity to provide input to systems design or to comment on design alternatives.

To inform selected field personnel about Redesign projects to be pilot tested in the Atlanta region and the Southeastern Program Service Center, central office staff held a 3-day seminar in July 1978 at the Southeastern center. This was the only such conference held during the project. Representatives from the Mid-America and Southeastern Service Centers and the Atlanta and Dallas Regional Offices attended the conference, but no local office personnel were included, even though they were also affected by the pilot tests.

Personnel from both program service centers stated that, after the conference, they were not kept informed on the status of specific Redesign activities. At one center we noted that some of the most current data available on Redesign activities were out of date. When we requested operations analysts at that center to provide data on additional activities discussed in a revision to the Redesign development plan, we found that key analysts were not aware of some of

these activities. Service center personnel explained that the center had not received key Redesign documents, including that particular development plan revision and several status reports. When asked about this, the Redesign project manager explained that he stopped sending status reports to the service centers because center personnel lacked enthusiasm and support for some Redesign projects. At the other service center we visited, operations analysts who had been deeply involved in validating major Redesign changes told us they subsequently received no feedback from SSA headquarters regarding any system modifications made to correct errors identified by the validations.

Insufficient involvement of local office users

Like regional office and program service center personnel, staff of local offices we visited in the Atlanta and Kansas City regions did not have the opportunity to provide input to Redesign project planning and design. Local office staff, a major segment of the SSA users to be served by the Redesign, were not included in the July 1978 conference at which the Redesign was discussed with users. In addition, although the local offices we visited received some information on Redesign activities--often in the form of implementing instructions for specific projects--from both SSA headquarters and their regional offices, they did not always receive subsequent information on the status or results of specific projects affecting their operations.

SSA should do more to increase user involvement

Under SSA's January 1979 structural reorganization, a newly created Office of User Requirements and Validation became responsible for identifying and requesting needed new and revised ADP systems and representing users during systems planning activities. Systems changes requested by that office were to be reviewed and approved, disapproved, or modified by an ADP Steering Committee before being implemented by the Office of Systems, which assumed responsibility for detailed system design, development, and implementation. Although the Office of User Requirements and Validation quickly recognized the need to increase user involvement in the overall system development/modification process and began developing specific plans and procedures for accomplishing this goal, these plans and procedures had not been finalized at the time of our

review. In addition, as discussed in the following sections, the limited action SSA has taken thus far to increase user involvement may not be resulting in systems initiatives that are responsive to current user needs.

Procedures for communicating with users not finalized

In its role as user representative, the Office of User Requirements and Validation planned to give all users of agency automated systems a greater opportunity to participate in defining how the systems development/modification process would work. In this regard, early office goals included

- --bringing all members of the user community more deeply into the entire systems development and change process,
- --providing all users with a clear understanding of systems direction in nontechnical language,
- --establishing appropriate mechanisms to ensure direct and responsive user feedback, and
- --describing monitoring and control mechanisms aimed at promoting timely and accurate responses to users.

To attain these goals, the office developed preliminary procedures for communicating with users both in field offices and in headquarters components. These procedures gave detailed directions for using such mechanisms as specific documents, user conferences, and onsite reviews of the operational environment to support users in systems planning and development. The procedures also described how various other communication channels, such as telephone calls and written correspondence, might be used not only to be highly responsive to user inquiries, but also to disseminate timely information to all users. In July 1980, however, SSA replaced top management of the Office of User Requirements and Validation. The new management told us in August 1980 that, although the office's early goals had not changed, top SSA management had not yet approved specific procedures for attaining those goals. As of November 1980 the office had not formally adopted the preliminary procedures previously developed. According to office management, many of these procedures were being successfully used anyway in communicating with users, and the office was expecting its new form for requesting

systems services--still being finalized at that time--to serve as its primary formal communication mechanism.

SSA should periodically reassess user needs

The Office of User Requirements and Validation has acted to implement one of its preliminary procedures for communicating with users--providing advance notice of major systems proposals being initiated. In its formal response to our October 1979 report on the Supplemental Security Income computerized system, SSA restated its intent to begin circulating periodic notices of systems proposals for the review and comment of all users, including field staff. We noted that the office did this in November 1979 while assembling data for assessing agency ADP budget needs for fiscal years 1981-85. At that time, the office invited field users to describe system projects or improvements they would like to see SSA undertake in addition to the proposal summaries being circulated. The thrust of this effort, however, was to obtain user comments on systems projects already proposed and reviewed by headquarters components. This approach, in our view, may not result in systems projects that respond to current user needs.

The office's approach has been to establish a project control system for needed systems improvements and changes by compiling an inventory of user needs, helping the ADP Steering Committee assign priority to those needs and identify necessary projects to meet them within available resource limits, and then notifying users of planned projects to obtain their comments, as discussed above. The office planned to regularly reassess established needs and adjust priorities and planned projects accordingly. However, we found no indications that the office has periodically reassessed its existing inventory to make sure it represents current and actual user needs. Office officials stated they have not been further soliciting current needs from field users.

In this regard, SSA headquarters personnel had already defined enough user needs during the past several years to keep the office busy for the next 5 years, and the systems project proposals circulated for user comments have been based on this "pipeline" of user needs, according to office sources. Thus, since those needs have not been periodically updated and, according to office sources, primarily represent the perceptions of SSA headquarters personnel rather than the current views of field users, the resulting systems

proposals may not reflect field user needs. All users--but especially those from field offices--could be better served if their role in the systems planning process was to provide a reliable basis for initial development of project proposals, rather than commenting later on proposals that may not reflect their needs.

INADEQUATE COST/BENEFIT ANALYSIS

Once users have defined their needs and objectives to be met by a proposed ADP system or system change and operationally and technically feasible system design alternatives for meeting those needs and objectives have been developed, a cost/benefit analysis should be made. By comparing the costs and expected benefits of each alternative system or change proposal, managers can select the particular configuration which will produce the desired results most economically. Such economic comparisons are an integral part of the overall systems planning process.

SSA included a cost/benefit analysis of the Redesign as part of the May 1977 Functional Requirements Document. It showed total annual costs of $3.4 million for equipment and software development, but total annual savings of $9.2 million due to reductions in manually processed transactions, files maintenance costs, and micrographic production costs--resulting in a net annual cost reduction of $5.8 million. The analysis allocated $1.9 million of this total cost reduction to SSA's proposed telecommunications upgrade/expansion project and the other $3.9 million to the Redesign. This analysis, however, was inadequate because it did not account for all required hardware resources, did not include certain personnel costs, contained questionable savings projections, and was not updated to reflect the many changes in Redesign activities and resource requirements.

Costs understated

The cost/benefit analysis in the Functional Requirements Document presented the estimated cost of acquiring direct access storage devices, mass storage equipment, communications linkages, and main memory for the Redesign. According to that document, these would be the only equipment acquisitions required for the Redesign. Specifically, the document noted that Redesign objectives had been "deliberately set at a level that avoids dependency on the acquisition of additional ADP resources," and that, therefore, "the RSDHI Redesign is not

dependent on the acquisition of major new ADP resources, although additional improvement in efficiency and cost-effectiveness may warrant such acquisitions." We believe this presentation was misleading, thereby precluding top agency management from fully understanding how crucial specific ADP resource acquisitions actually were to project success and how much such acquisitions would cost.

The November 1978 revision to the Redesign development plan pointed out the need to acquire additional direct access storage and main memory capacity, acknowledging that the earlier stated requirements for this equipment had been underestimated. SSA systems officials also indicated that, to successfully carry out Redesign activities, SSA would have to replace card reader equipment and upgrade certain ADP equipment, not only in the headquarters telecommunications complex, but also in the program service centers--acquisitions not included in SSA's cost/benefit analysis.

SSA's telecommunications upgrade/expansion proposal called for providing all district and branch offices and program service centers with modern telecommunications equipment. The cost/benefit analysis for the Redesign allocated most of the anticipated reductions in files maintenance costs to the telecommunications project, recognizing that such savings depended on SSA installing telecommunications equipment in all program service centers. Later SSA discussions of Redesign status made it clear that key project benefits, such as reduced files maintenance costs and decreased micrographic production costs, could not be fully realized until the agency upgraded and expanded its telecommunications capabilities in field offices. However, the costs associated with acquiring and installing this equipment were not presented in the Redesign cost/benefit analysis. In our view, since SSA acknowledged that upgrading and expanding telecommunications capabilities in the field--as proposed under the telecommunications project--would be required before SSA could fully achieve anticipated Redesign savings, the costs of such upgrade and expansion should have been recognized in the cost/benefit analysis and allocated between the two projects.

The cost/benefit analysis also failed to reflect all personnel costs associated with the Redesign. Software development costs, for example, were based on an average of 75 systems development personnel employed over a 1-year period, at a per capita cost of $32,400. According to the Redesign project manager, however, the time required to develop

the software greatly exceeded 1 year. This would have increased the total personnel costs associated with software development, although specific figures were not available. Personnel costs for other than software development activities--such as testing, validation, and training directly related to Redesign activities--were not included in the cost/benefit analysis, even though such costs were apparently substantial. SSA did not maintain an accurate record of such costs, but SSA staff involved with Redesign projects indicated that considerable time and effort were required to test, implement, and refine Redesign changes.

Projected savings questionable

As the Redesign progressed, the savings projections contained in the cost/benefit analysis became questionable. For example, the cost/benefit analysis projected that the Redesign would ultimately save 290 staff-years annually by reducing handling of claims folders at program service centers. SSA tested this concept by conducting a 6-month folderless processing experiment in six operations modules at its Southeastern Program Service Center. This experiment showed that SSA would have to solve numerous operational problems, including online data base limitations and poor telecommunications response time, before the folderless approach to processing RSDHI transactions at service centers could be considered practical.

Folderless processing during the experiment was slower and in some cases less accurate than traditional processing procedures, required significantly more manual actions, and created work backlogs. Although SSA records we examined did not contain precise data on how large the manual workload increase was, the managers of one participating module estimated that, in processing cases under the folderless approach, their staff spent almost 13,000 more hours than would have been required using traditional processing procedures. In addition, service center management had to assign additional staff--more than 2,000 staff-hours--to the participating modules to maintain satisfactory workload processing levels.

Cost/benefit data never updated

Unless top management of a Federal agency can compare expected system development/modification costs to expected benefits, either of which may change during a prolonged

development/modification process, it will have no assurance that the resulting system or change will be cost beneficial. Therefore, cost/benefit analyses regarding the development or modification of an ADP system--especially one of substantial size and complexity--should be updated periodically to enable top management to make such comparisons and, when changes occur, to decide whether system development/modification should be continued, revised, or terminated. To reflect the increases in resource requirements for the Redesign as well as events having the potential to reduce projected benefits, as discussed above, SSA should have updated the initial cost/benefit data when such changes became known. However, during the project SSA neither updated its initial cost/benefit analysis nor maintained any ongoing record of Redesign-related costs. In essence, the only Redesign cost/benefit data SSA prepared during the project were those included as part of the May 1977 Functional Requirements Document.

SSA did not track Redesign costs either from an overall perspective or for each individual system change. According to the Redesign project manager, this was because the agency generally considered Redesign activities to be part of normal RSDHI system operations. Savings data projected for the Redesign, like cost data, were not adequately updated. An SSA budget official explained that identifying savings specifically attributable to Redesign activities would be difficult because field offices and agency headquarters components either did not distinguish Redesign activities from other changes to normal systems operations or did not consider Redesign activities as distinct projects for accounting purposes.

FRAGMENTATION OF MANAGEMENT DUTIES

As shown above, SSA did not sufficiently involve field users in the Redesign and failed to adequately measure Redesign costs and benefits. Such deficiencies occurred, at least in part, because SSA did not provide for consistent management of the Redesign.

In the system development/modification process, as discussed in our October 1979 report on the Supplemental Security Income system, the project leader should represent top management and be responsible for controlling and coordinating the system project. The project leader is normally given the authority for making decisions on personnel

resources, scheduling, cost and budget, and most technical matters. As the leader of a team comprising persons with mixed skills, he or she should provide a well-defined, structured environment within which system development/modification can progress in an orderly manner. The project leader should also serve as the interface between users, system programers and analysts, system validators, and top management. These responsibilities and associated duties clearly require full-time attention. They should be established at the outset of the project and provide for performance and management accountability, enabling management to effectively control the development/modification process.

Although SSA appointed a Redesign project manager in January 1977, the agency later chose the same person to also manage key daily systems operations activities, thereby reducing the time and effort he could spend on Redesign activities. Similarly, other systems staff also worked simultaneously on normal daily systems operations as well as Redesign activities. According to the project manager, these personnel sometimes gave priority to daily systems operations and maintenance and worked on Redesign activities when time was available. On the other hand, he indicated that they may on occasion have been reluctant to make minor modifications to existing computer programs if such programs were eventually to be replaced as part of the Redesign.

In the project manager's view, assigning responsibility for both ongoing daily systems operations and Redesign projects to the same staff is appropriate since the systems staff responsible for daily operations must maintain those operations even after they have been redesigned. Such a rationale, however, contradicts a basic organizational concept described in two of our prior reports discussing SSA systems activities. 1/ This concept implies that, to be effective, ADP systems planning, design, and development at SSA should be performed by a separate group freed from interruptions caused by day-to-day operations. In our view,

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1/"The Social Security Administration Needs To Continue Comprehensive Long-Range Planning" (HRD-79-118, Sept. 20, 1979).

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

this concept applies as well to systems modification activities like the Redesign. The project manager and systems personnel assigned to the Redesign should have been able to devote all their time to planning, designing, and implementing the system changes associated with the project.

CHAPTER 3

INADEQUATE VALIDATIONS PREVENTED SUCCESSFUL IMPLEMENTATION OF RSDHI REDESIGN CHANGES

As discussed in our October 1979 report on the Supplemental Security Income computerized system, validation--or acceptance testing--of ADP system changes, whether the result of initial system design or later modifications, requires thorough testing of the system's performance, functional specifications, documentation, outputs, operating procedures, and user procedures. The entire system should be validated before implementation begins and audited after implementation in order to maintain its integrity, even when the program or system modification is minor. System validation is needed to test whether the entire system will function as required by the user and as designed by the systems analyst; post-implementation audit is needed to assure that the system continues to function in this manner after becoming operational.

Nevertheless, SSA did not perform adequate validations before beginning implementation of major RSDHI Redesign segments, and Department of Health and Human Services internal auditors never audited these system changes. In attempting to validate major segments of the automated job stream--a series of system changes designed to increase and improve automated processing of RSDHI claims and postentitlement actions 1/--SSA (1) did not select program test cases adequately, (2) failed to fully perform validations throughout the entire system, and (3) began implementing major systems changes prematurely. Consequently, significant system deficiencies in the automated job stream were not detected and corrected, resulting in many social security beneficiaries receiving incorrect benefit payments and confusing payment notices. SSA field offices had to spend considerable staff time helping beneficiaries resolve these payment and notice deficiencies.

These validation shortcomings and the resulting automated job stream deficiencies apparently occurred primarily because SSA (1) had not developed formal validation standards and procedures, (2) may not have allocated enough staff time

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1/Discussed in chapter 1.

to testing system changes, (3) failed to ensure that the validation group could control all program and system modifications, and (4) had not established adequate system performance criteria upon which to base validations.

SHORTCOMINGS IN SSA'S APPROACH TO VALIDATING THE AUTOMATED JOB STREAM

Inadequate case selection

SSA officials connected with the RSDHI Redesign defined validation as the use of a test file to verify that a computer program processed correctly. In addition to test data, SSA also used live processing--pilot runs--to test the accuracy of some Redesign changes. According to SSA, pilots of certain Redesign changes were run live, but only on a small scale, such as at one program service center, to identify possible errors not detected by using test data. Such pilots were used to verify that a Redesign change was ready to be implemented nationwide.

Although some problems can be expected when varied complex transactions are processed, use of adequate test data should identify serious problems before program implementation begins. SSA's selection of cases for validating Redesign changes, such as those comprising the automated job stream, however, did not always provide adequate data for testing the programs' ability to process complex transactions correctly.

Number and types of cases insufficient

Test criteria for validating a system should be as comprehensive as possible. As a minimum, the test data should include all combinations of valid transactions in order to test their acceptance and proper processing by the system. However, SSA's test file for validating the annual retirement

test segment 1/ of the automated job stream was not sufficiently comprehensive.

Although beneficiaries ultimately submitted nearly 1 million annual earnings reports for 1978, SSA program officials provided for a test file of only 2,000 cases in their detailed plan for validating the annual retirement test segment of the automated job stream. That number was based on the workload SSA believed its validators could handle, rather than the number needed to adequately test the system change. An SSA official closely associated with validation activities told us that SSA program officials wanted the test file to include a variety of transaction types that the new program would need to process, especially difficult types. Accordingly, their validation plan provided for including in the test file cases requiring specific types of actions. When the test file was prepared by SSA's systems personnel, however, it consisted of less than half of the requested 2,000 cases and did not adequately represent all the specific types of cases required. (See pp. 28 and 29.) According to an August 1979 report by SSA's Office of Assessment, test file cases were selected without regard to the characteristics of the case situations, and as a result, deficiencies in the system were not identified and corrected promptly, causing serious processing errors. (See pp. 27 to 32.)

Similarly, in selecting test file cases for validating the recomputations portion 2/ of the automated job stream,

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1/The Social Security Act requires that certain beneficiaries have their benefits reduced if they work and have earnings that exceed an annual exempt amount. These beneficiaries must file an annual report of earnings with SSA to facilitate the required benefit adjustments. This procedure is known as the annual retirement test. A major element of the automated job stream was to handle the automated processing of annual earnings reports and related benefit adjustments and beneficiary notices.

2/Another element of the automated job stream was established to handle certain other benefit payment adjustments applicable to working beneficiaries, such as the annual recalculation of benefit payments to reflect additional beneficiary earnings.

SSA again based the number of test cases on the perceived capacity of its validation staff. SSA program staff believed it was nearly impossible to represent every potential case in the test file because of the number of variables and types of payment situations. In addition, they referred to difficulties in getting the systems staff to provide adequate numbers of test cases and to provide such cases promptly.

Before SSA began implementing the annual retirement test segment of the automated job stream nationwide, program service center personnel verified the results of two pilot runs of the program. The results convinced SSA officials to proceed with nationwide implementation because the payment accuracy rate shown was equivalent to that in prior years using the unmodified ADP system. Program service center personnel informed us that the pilot runs included some of the more difficult types of cases. They added, however, that verification--both before and after nationwide implementation--was primarily directed toward the easier cases. Thus, the verification of pilot runs did not give SSA a complete projection of how accurately the job stream would process annual retirement test cases, including the more difficult ones.

Invalid test cases not used to check program controls

Validation is supposed to verify processing accuracy, and one method is to compare processing results with predetermined test results. The test files should contain data to test both valid and invalid conditions as well as a predefined set of input and output transactions.

However, test data for validating both the recomputations and annual retirement test portions of the automated job stream consisted primarily of actual case records selected from SSA files; no erroneous case data were included. While actual case data could be used to verify a program's ability to process valid cases correctly, these data were not able to test program controls for identifying and rejecting erroneous or invalid data. Although SSA validators did create data for about 15 percent of the test cases associated with the annual retirement test programs, these data had valid rather than erroneous case characteristics. Thus, such data were created apparently in order to include additional specific types of actual cases in the test files, not to test program controls for handling invalid data.

Validations not adequately performed throughout the system

For proper validation, a program change should be tested throughout the entire system to determine its impact on other system aspects. This was not adequately done for RSDHI Redesign changes. For example, in validating the annual retirement test segment of the automated job stream, SSA did not fully test how these changes might affect other portions of the RSDHI system, even though output from the annual retirement test segment also serves as input for updating other RSDHI system elements, such as the MBR and the Recovery of Overpayments, Accounting, and Reporting Subsystem. Improper updating of the MBR could, in turn, result in erroneous benefit payments.

MBR data deficiencies would result either if the system added erroneous annual retirement test data to the MBR or if the system failed to carry out the updating function correctly. Both of these conditions may have existed during the Redesign. For example, both program service center personnel and local office staff expressed doubt about the reliability of data produced by the annual retirement test segment of the job stream. In addition, an operations analyst at one service center told us that the MBR was not properly updated when certain changes were made to the annual retirement test program. This may have resulted in payment errors when MBR data were used for later transaction processing. The automated job stream rejected some cases where MBR data needed by the system for computing benefits were missing or questionable, thus requiring extensive manual verification. However, program service center personnel could not determine how often the system was computing program benefits using inaccurate or out-of-date MBR data.

Premature implementation

Validation of computer program changes is preimplementation activity. Before beginning implementation, procedures needed for converting to the new programs and for building new files should be prepared. After conversion procedures are completed, the entire system should be validated to make sure that it performs in accordance with all functional and performance specifications, meeting user needs and objectives. Only after the system has been certified to be accurate and complete, should it be placed into operation. However, SSA

began implementing certain major Redesign changes, even though they had not been validated to the validitors' satisfaction.

Under the annual retirement test requirements of the Social Security Act (see p. 22), beneficiaries must report their earnings for the year by April 15 of the following year. SSA generally begins processing the earnings reports as they are received and adjusts benefits accordingly. The 1977 amendments to the act changed the annual retirement test operation in 1979, requiring SSA to decide whether to modify the existing annual retirement test computer program or to incorporate the required program changes into the automated job stream. SSA did not reach its final decision to pursue the job stream approach until August 1978, substantially limiting the time available to develop, validate, and implement the annual retirement test segment of the job stream. As a result, SSA did not complete its validation activities before beginning to process beneficiary earnings reports. Although SSA emphasized validating certain types of actions, such as automated computations and deductions, it did not fully validate other actions, such as month of election adjustments 1/ and final MBR annotations. The completed validations identified numerous problems, some of which SSA did not correct.

Initial validation of the recomputations segment of the automated job stream identified certain program problems requiring correction. According to SSA validation personnel, however, the resulting program changes made to correct these problems were never validated because of pressure to move quickly on to new Redesign activities.

1/This generally refers to certain cases involving reduced benefits in which the RSDHI system is to automatically adjust the month of entitlement while processing the beneficiary's earnings report for the year of application. As a result of the 1977 Social Security Act amendments, SSA cannot complete these adjustments until beneficiaries have reported their earnings for the year of application.

AUTOMATED JOB STREAM PROCESSING ERRORS DEMONSTRATE THE NEED FOR IMPROVED VALIDATIONS

SSA began implementing the recomputations and annual retirement test segments of the automated job stream without correcting system deficiencies that proper validation should have identified for correction. These deficiencies caused many beneficiaries to receive erroneous benefit payments and confusing payment notices, the resolution of which required substantial additional work by SSA field offices.

Processing by recomputations segment not accurate

Although the recomputations segment of the automated job stream was able to automate about 65 percent of annual recomputations previously processed manually, validations have demonstrated the need to improve the program's accuracy. The processing accuracy rate ranged between 59 percent and 68 percent before nationwide implementation in October 1978, according to initial validation results.

We found no precise data on the degree of processing accuracy by the recomputations segment after SSA implemented it nationwide. However, a program service center analyst closely involved with validating the recomputations segment told us the programs had problems not only when SSA began implementing them, but also when SSA revised them to accommodate changes required by the 1977 amendments to the Social Security Act. In fact, some changes required by the amendments--such as rate adjustments for widows who remarry--did not work at all, according to the analyst, and cases had to be processed manually.

Although the analyst believed that most initial program problems with the recomputations segment of the job stream had been corrected, she noted that the program still was generally unable to process the more difficult, error-prone cases, such as widows' cases. She added that it was also unable to process certain cases containing pre-1972 data, because of limitations in the previous computer program that had been incorporated into the job stream. In addition, cases involving such factors as readjusted benefit rates and partial month payments were often processed inaccurately, according to the analyst.

SSA headquarters personnel told us that the agency has continued to make program corrections to the recomputations segment of the job stream. However, a revalidation of the annual recomputation program in late 1980 showed that it was still unable to correctly process certain cases and would sometimes generate incorrect payments.

Annual retirement test segment caused multiple problems for beneficiaries and SSA

SSA began implementing the annual retirement test segment of the automated job stream nationwide in March 1979. In August 1979, personnel from the Mid-America Program Service Center advised SSA headquarters of their concern over the apparent inability of the job stream to process large numbers of annual retirement test cases accurately. They indicated that the annual retirement test segment of the job stream contained at least 68 separate program problems--some affecting many cases and others extensively affecting future processing. In addition, they noted that, although the system identified for follow-on manual review many cases having questionable or incomplete data elements that might affect benefit payments, it had issued checks, updated the MBR, and generated beneficiary notices, even though the follow-on case reviews had not been made. About 25 percent of the annual retirement test cases processed were in this postreview category, and the results of later program service center case reviews indicated that a large percentage of transactions processed by the job stream were incorrect, requiring complete reworking of the cases.

For example, a program service center sample of processed dual entitlement 1/ cases showed that only one-third of the cases were totally correct, having no payment, documentation, or notice errors. The program service center recommended to SSA headquarters that further job stream processing of postreview cases be suspended until after completion of such reviews. According to an SSA headquarters official, the agency took no action on this recommendation, but instead directed program corrections at the source of such errors.

1/This generally refers to instances where one beneficiary is entitled to more than one program benefit at the same time, such as a widow entitled to survivors insurance benefits because of her deceased husband's earnings and to retirement insurance benefits because of her own earnings.

Erroneous benefit payments

Although numerous underpayments and overpayments of RSDHI benefits apparently occurred as a result of program problems in the annual retirement test segment of the job stream, SSA could provide no precise data quantifying such payment errors. According to SSA officials, the agency made no comprehensive effort to identify payment errors before May 1979, when it began a review of all annual retirement test processing output. Although this review identified certain individual erroneous payments, SSA prepared no comprehensive erroneous payment statistics. After reviewing a sample of annual retirement test cases processed during 1979, however, SSA's Office of Assessment projected that system errors had caused about $3.6 million in overpayments and $3.9 million in underpayments to beneficiaries.

Individual payment errors were sometimes brought to SSA's attention by beneficiaries themselves or were identified by later reviews or actions at the program service centers. One center reported overpayments as high as $1,500 to individual beneficiaries because the system incorrectly handled certain cases involving readjustment of the benefit rate. Such overpayments increased SSA's recovery workload and resulted in SSA requesting numerous beneficiaries to return checks. Similarly, system-caused underpayments not only delayed payments due beneficiaries, but also required SSA to incur the administrative costs of making payment adjustments.

We noted one instance where program problems resulted in the annual retirement test segment of the job stream generating substantial overpayments. While implementing program changes made in response to the 1977 Social Security Act amendments, SSA estimated that overpayments totaling between $10 million and $15 million would be paid to some beneficiaries. Because of the administrative cost of collecting the overpayments and the resulting inconvenience to beneficiaries, SSA waived recovery of all such overpayments. In some of these cases, the annual retirement test program correctly computed the amount to be waived but, instead of waiving it, considered it an underpayment and issued a check for the amount, resulting in a second overpayment to some beneficiaries. Explanatory notices generated by the system and sent to the beneficiaries indicated that the checks represented "benefits due." Based on its sample case review, the Office of Assessment projected that the system processed as many as 3,000 cases of this type

incorrectly. Program service center personnel reported that the amount of the second overpayment was as high as $4,000 in certain cases. The Redesign project manager told us this type of case was not well represented in the test file used to validate the program.

Confusing beneficiary notices

SSA designed one element of the annual retirement test segment of the job stream to automatically generate a beneficiary notice explaining any upcoming benefit adjustments based on the annual earnings data the beneficiary had submitted. The notices generated by the system in early 1979, however, were frequently erroneous, confusing, and unintelligible. For example, the first 11 lines of one such notice contained the following statements:

> "We received your work report showing that you worked in January through December and earned $3,765.00 in 1978 and that you expect to earn $2,227.00 in 1979.
>
> "Because you did not earn more than $3,240.00 in 1978, we are not required to withhold any benefits for that year.
>
> "Because you do not expect to earn more than $4,500.00 in 1979, we are not required to withhold any benefits.
>
> "The amount of the overpayment will be recovered by withholding $47.00 a month from your benefit payments beginning May 1979."

As shown above, this notice not only contained contradictory information regarding the amount of the beneficiary's earnings for 1978, but also informed the beneficiary that future benefit payments would be reduced to recover an overpayment, even though earlier statements indicated that no such benefit withholding was required.

In some cases, even local office personnel were unable to interpret the notices and had to request assistance from program service center personnel before responding to beneficiary inquiries. One local office estimated that as many as 50 percent of the notices were erroneous.

The Office of Assessment reported in August 1979 that its staff identified one or more notice defects in about 15 percent of the completely automated annual retirement test actions. Common errors identified by the staff for such cases not subject to manual review after system processing included:

--The beneficiary was advised that the correct amount of benefits had been withheld for the year when, in fact, he or she had received an underpayment or overpayment.

--The beneficiary was advised that an adjustment had been made for increases in benefits due when there were no such increases.

--The beneficiary was not advised of the reason for a benefit rate change where such change was made to give credit for benefits not paid due to work.

The erroneous notices had a tremendous impact on RSDHI beneficiaries, and as a result, SSA received a lot of adverse publicity. In August 1979 the Commissioner initiated a special high-priority effort to "clean up" the notices. As part of this effort, SSA awarded a consultant contract to a private software development firm in October 1979 for assistance in correcting the systems problems causing the erroneous notices. Under this contract, as later modified, the private firm had received over $320,000 as of November 1980. At that time, SSA was internally processing a contract amendment to provide up to an additional $200,000 to cover remaining contractor services. These contract costs are in addition to administrative costs incurred by SSA to develop software performance specifications, monitor contractor activities, and validate the software developed by the contractor.

Additional work imposed on SSA field offices

Both local offices and program service centers felt the impact of faulty processing by the annual retirement test segment of the automated job stream. Because of the overpayments, underpayments, and confusing notices generated by the computerized system, local office personnel were "swamped" with beneficiary inquiries. A service representative at one local office we visited stated that the automated job stream

caused twice as much work in handling the annual retirement test operation in 1979 as compared to the year before. Field office personnel told us they did not receive adequate training, procedures, or alerts concerning the increased workload and what was received was not timely. For example, several weeks after beneficiaries began coming to one local office with questions on their notices, that office received a teletype from SSA headquarters indicating that the notices would not be accurate.

The impact of annual retirement test problems on the program service centers went beyond responding to beneficiary inquiries. As of March 1979, when SSA began implementing the annual retirement test segment of the job stream nationwide, over 900,000 earnings reports were awaiting processing at the service centers. Because of the magnitude of later program problems, SSA's Commissioner required a review of all annual retirement test processing output. The service centers began this review in late May 1979. Because of substantial case backlogs, the two service centers we visited initially established full-time special work groups to perform the review. One service center assembled a group of 14 full-time and 12 as-needed staff, which spent 163 staff-days on this project. Their review identified that about 32 percent of the cases required additional work, such as corrections to notices or preparation of a notice. Personnel at the other service center spent about 175 staff-days on similar work. SSA discontinued the review in March 1980 even though about 35 percent of the notices continued to contain errors. SSA indicated it had corrected major notice deficiencies, such as garbled language and disjointed paragraphs, and that continuing the review would make it difficult for the service centers to handle upcoming workloads.

In summary, the annual retirement test segment of the automated job stream was described by one program service center official as the "most traumatic of programs," hurting the morale of service center staff immeasurably because it caused large work backlogs, program problems, and complaints from local offices and beneficiaries.

Status of annual retirement test processing by the automated job stream

According to an SSA official involved in annual retirement test processing operations, the agency began correcting identified system problems in late 1979 and began processing

the 1979 annual retirement test workload in January 1980. At that time, however, SSA's Office of Assessment reported that it was unable to determine whether identified system problems had been corrected. As of November 1980, SSA had essentially completed this processing but had not completed analyzing processing accuracy. We noted indications that overall processing had improved compared to 1979. However, SSA acknowledged in September 1980 that a number of "processing anomalies" in the annual retirement test software remain to be corrected, noting that this software has yet to be perfected to the point of being operationally stable.

SSA WEAKNESSES LEADING TO INADEQUATE VALIDATIONS

As shown above, SSA's failure to properly validate the automated job stream resulted in uncorrected systems flaws that created substantial hardships for SSA and beneficiaries. In identifying potential causes of SSA's validation shortcomings, we noted that the agency (1) had not developed formal validation standards or procedures, (2) may not have allocated enough staff time to testing Redesign changes, (3) failed to ensure that the validation group could control all program and system modifications, and (4) had not established system performance criteria upon which to base validations.

Lack of validation standards or procedures

According to SSA staff involved with validating automated job stream segments, SSA had not developed formal validation procedures. As a result, SSA did not employ generally accepted techniques in attempting to validate these systems changes. For example, as noted, SSA personnel based the number of test file cases to be selected on the workload they believed the validating staff could handle, and they specified the types of cases to be used for test purposes primarily on the basis of the validating staff's knowledge of case types to be processed, rather than on specific guidelines for selecting test cases. Similarly, rather than developing processing accuracy standards for determining when validation was complete and full-scale implementation could begin, SSA adopted a "hurry-up" approach to project implementation.

In May 1980, SSA's Office of User Requirements and Validation--the structural component with responsibility for validating systems changes--issued interim validation guidelines that prescribed very general procedures for conducting such validation activities as selecting test cases, identifying the impact a given systems change may have on other program applications or subsystems, and determining the processing accuracy required for implementation. According to an office representative, these guidelines were to establish parameters and ranges to help validators perform these activities, and the agency expected to incorporate more detail into future versions. It is too soon to tell whether the guidelines are bringing about improvements in these validation areas.

Not enough staff time allocated to validations

Validations of RSDHI Redesign projects were performed by SSA central office personnel and program service center staff. We found no SSA data showing precisely how many staff were performing project validation activities at any time or how much time the validators spent testing system changes. However, as stated, SSA program personnel restricted automated job stream test files to a case level they felt the validators could handle, resulting in test files that were not sufficiently comprehensive. The amount of staff time allocated to validation should be determined in part by the number of test cases needed to adequately test a system change, not vice versa. Thus, SSA may not have allocated sufficient staff time to validating system changes.

Validators not controlling all program and system changes

Because validation tests all aspects of a system--including its performance, functional specifications, documentation, outputs, operating procedures, and user procedures--to assure that each aspect and the total system function as required by the user and as designed by the systems analyst, systems validators must control all planned changes so that no changes can be made without their approval. In this regard, validation team members must also maintain independence from those responsible for implementing the system changes--in this case, SSA systems personnel.

However, SSA systems staff not only had responsibility for developing Redesign changes, but also played a major role in validating those changes. They supplied the test data, ran the tests, and sometimes maintained more control over certain aspects of the validations than did the validators. For example, as noted, systems staff did not meet the validators' specifications in selecting test file cases for the recomputations and annual retirement test segments of the automated job stream, according to SSA program personnel. In addition, despite contentions by the validation staff that the recomputations segment was not ready, the Redesign project manager--a member of the systems staff--and the user liaison committee made and then carried out the decision to begin its implementation. Placing responsibility for validations within the Office of User Requirements and Validation--achieved during SSA's 1979 structural reorganization--may eventually promote greater independence of the validation staffs from those involved with the design and development of systems changes.

Lack of baseline system performance criteria

As previously defined, validation is to assure that a system functions as required by all key users. However, as noted in chapter 2, SSA never effectively solicited the requirements of certain key users regarding proposed RSDHI system changes. As a result, SSA had no comprehensive user criteria describing desired system performance against which to validate Redesign changes. Thus, SSA apparently would still have been unable to adequately validate RSDHI system modifications, even if proper validation procedures had existed and validators had been given sufficient staff time and authority to properly test Redesign changes.

In May 1980, SSA issued revised standards for developing functional requirements for proposed system modifications. SSA expected these standards, in conjunction with the interim validation guidelines discussed above, to facilitate users' providing the required system performance criteria. The standards appeared to be directed primarily toward users in agency headquarters. However, it is too soon to tell whether these standards are resulting in the development of comprehensive system performance criteria to be used during validation.

INTERNAL AUDIT STAFF NOT INVOLVED IN RSDHI REDESIGN

The internal audit staff of a governmental organization should participate actively in reviewing the system design and development/modification process in order to verify that application systems being developed or modified comply with development and operational standards and include adequate automated controls and audit trails. Once ADP system changes have been implemented, the internal auditors should also review the entire system to assure that it performs satisfactorily and that it is meeting its objectives. This audit--in part a postimplementation validation--should measure the effectiveness of any automated controls and audit trails built into the modified system and assess the system against the goals and objectives previously established for it.

In our October 16, 1979, letter report (HRD-80-5) to the Secretary of Health, Education, and Welfare concerning weaknesses in SSA's Supplemental Security Income computerized system, we noted that the Department's Audit Agency had reviewed neither the process SSA used in designing and developing system modifications nor the effectiveness of automated controls built into the system. This finding also applies to the RSDHI Redesign. A Department auditor assigned to ADP reviews at SSA told us in July 1980 that the Audit Agency had yet to become involved in the design and development of new ADP systems at SSA, but planned to do so in the future. He added that, although Audit Agency staff have performed ad hoc evaluations of how well certain SSA ADP systems function, they have not performed any review work specifically aimed at assessing systems changes implemented under the RSDHI Redesign or any other system redesign activities at SSA. In responding to the recommendations contained in our earlier report, the Department explained that the Audit Agency has performed limited work in these specialized audit areas because of a lack of qualified staff. The Department added that, although it was undertaking an intensive training program and employing several computer systems analysts, comprehensive ADP evaluations at SSA remain a long-range goal.

CHAPTER 4

RSDHI REDESIGN HAS POTENTIAL FOR IMPROVING SSA SERVICE TO THE PUBLIC

During our review, we identified major RSDHI claims and postentitlement operations that have been hindered by recurring deficiencies in the automated system. Primary elements of the RSDHI Redesign were appropriately directed toward improving these prevailing problems. Although SSA did not fully and successfully implement some of the major systems changes planned under the Redesign, the agency substantially completed certain other Redesign changes during 1977, 1978, and 1979. Although available data were not sufficient for isolating and quantifying the precise impact of these changes on overall RSDHI system operations, we did identify specific transaction processing improvements and ADP operations enhancements--some already realized and others probable if suspended activities are resumed--that can be associated with Redesign activities.

Despite the problems certain Redesign elements caused for SSA field offices, as discussed in the previous chapter, field personnel we interviewed generally still considered the Redesign practical and desirable. Thus, it appears that the Redesign--if properly planned, developed, and implemented--could further improve SSA service to the public.

REDESIGN IMPROVED RSDHI CLAIMS OPERATIONS AND FURTHER IMPROVEMENTS POSSIBLE

SSA directed a key element of the automated job stream as well as certain other Redesign changes toward improving the timeliness and accuracy of processing initial RSDHI claims. 1/ Focusing these system changes on improving initial claims processing operations is appropriate because these activities are the largest single source (23 percent) of about 6 million manual program actions each year. In completing several of these system changes, SSA appears to have improved claims operations, and further improvements are likely if SSA can successfully complete the others.

1/This generally refers to initial requests by individuals to be placed on program rolls and/or requests for information regarding potential entitlement and the amount of benefits payable.

Claims operations improved due to Redesign changes

Although SSA did not implement the claims segment of the automated job stream, the agency completed several other planned systems changes during the Redesign which appear to have improved initial claims operations. SSA implemented several planned enhancements to the existing automated claims subsystems during 1977 and 1978. Also, during 1978 the agency expanded the online data base to include such additional information as precomputed earnings data, which enabled adjudication of claims at earlier points in the claims process and eliminated the necessity for headquarters to provide copies of certain systems output to field offices. During 1979 SSA further expanded the online data base to include benefit estimate data for certain individuals and selected MBR data for all RSDHI beneficiaries, as planned under the Redesign. The availability of benefit estimate data online has enabled field offices to respond more quickly to inquiries from the public concerning potential entitlement to program benefits and approximate benefit amounts, and eliminated the need to handle these requests manually. In addition, according to SSA, field office access to abbreviated MBR data online has substantially reduced the time required to process subsequent claims. 1/

The Redesign has also enabled field offices to process claims more quickly by improving their access to earnings data. Entitlement to RSDHI program benefits and the amount of such benefits generally are determined on the basis of an applicant's employment and earnings history. In September 1979, SSA implemented a Redesign change by which, under certain conditions, abbreviated earnings data are transmitted over the telecommunications network to field offices. SSA estimates that claims meeting the required conditions can be processed up to 7 days faster than other claims.

1/This generally refers to an additional benefit claim filed on the basis of one worker's earnings record after initial entitlement based on that record has been established, such as when a wife whose husband is already entitled to retirement insurance benefits because of his earnings files for wife's benefits based on the husband's earnings.

Online access to benefit estimate data and abbreviated earnings information by field offices enabled SSA to implement accelerated claims processing nationwide in December 1979. This claims processing concept was the subject of an earlier Redesign pilot test in the Atlanta region. (See discussion of accelerated processing on p. 9.) A preliminary SSA analysis of sampled initial claims processed under the accelerated approach from January through March 1980 showed that accelerated processing substantially decreased processing time while slightly increasing accuracy. For example, average processing time for monthly benefit claims--21 days under regular processing procedures--dropped to only 7 days (a 67-percent reduction) for those monthly claims in SSA's sample processed under the accelerated approach.

Further improvements likely if Redesign claims projects successfully implemented

Claims authorized by program service centers are more difficult to develop than claims receiving final payment authorization from local offices; thus, they take longer to process and usually have a lower processing accuracy rate. In analyzing claims processing quality at SSA's Mid-America Program Service Center, we reviewed agency semiannual quality appraisal reports for July 1976 to June 1979. These reports showed that payment errors occurred in between 6.4 and 11.3 percent of claims authorized at the local office level and between 7.5 and 14.6 percent of those authorized at the service center. According to these reports, four different types of payment deficiencies occurred in claims authorized at local offices during four or more of the six reporting periods. For service center-authorized claims, six different types of payment errors were reported during four or more of the six periods. Service center operations officials believed that successful implementation of the RSDHI Redesign would help reduce most of these payment deficiencies. In addition, the availability of key MBR data online should hasten the processing of claims involving such data, and the Redesign's provisions for reducing the time required to update the MBR could further improve both timeliness and accuracy of such claims operations.

The claims segment of the automated job stream was designed to replace the existing awards processing operation and automate most of the related manual actions, such as subsequent claims and dual entitlement cases. In SSA's view,

increasing the automation of the claims process through the job stream should reduce both average processing time and payment errors. In addition, the agency estimates that fully automating the claims process would save about 189 workyears of manual processing effort annually. Agency sources believe that successfully implementing the claims segment of the job stream should be one of SSA's top systems priorities.

In conjunction with the automated job stream, the Redesign was also to expand the transaction control system capabilities for claims actions by consolidating multiple claims files and by providing online edit and input validation capabilities. Such an expansion, if successfully implemented, could further improve both timeliness and accuracy of claims processing.

As of November 1980, SSA was planning to resume work on these system enhancements during fiscal years 1981 and 1982.

REDESIGN PROBABLY HELPED IMPROVE POSTENTITLEMENT PROCESSING AND FURTHER IMPROVEMENTS POSSIBLE

Nationwide SSA quality assessment data covering the period from October 1976--when SSA established the objectives of the RSDHI Redesign--to March 1979 showed trends toward greater accuracy and/or improved case processing timeliness for certain types of postentitlement transactions. During this period SSA implemented several Redesign changes--such as expanding the MBR (completed in December 1977), enhancing the subsystem for adjusting benefits due to overpayments (implemented in January 1978), and expanding the online data base (accomplished in stages during 1978 and 1979)--which could affect the processing of certain postentitlement actions. Although we found no data directly associating these system changes with improved postentitlement operations, it is likely that some of them have helped improve general postentitlement transaction processing, and additional improvements are possible if SSA successfully implements other Redesign changes.

System processing of postentitlement actions probably aided by Redesign changes

Although we were unable to measure the precise impact of the Redesign on postentitlement operations, Redesign changes probably have enabled the automated system to better process postentitlement actions. For example, the MITRE

Corporation--a systems engineering, research, development, and advisory services organization--reviewed and analyzed SSA's approach to data base development in support of the Redesign. In a September 1978 report, MITRE concluded that expanding the online data base by adding selected MBR data would result in significant computer resource savings. Although the study did not specifically quantify these savings, it recognized that improvements to the accessibility of such data for use by SSA field offices in serving beneficiaries would reduce computer resource requirements.

In this regard, the addition of summary MBR information to the online data base, implemented under the Redesign in June 1979, gave program service centers and local offices having online telecommunications equipment quicker access to beneficiary account data on the MBR, which is required to process most postentitlement transactions. Technicians at one local office we visited said they can now get MBR information immediately instead of waiting a week as in the past.

Redesign has potential for decreasing manual benefit adjustments

In analyzing semiannual quality appraisal reports on postentitlement transaction processing at the Mid-America Program Service Center for July 1976 to June 1979, we noted that computer-processed actions were at least 4 percent more accurate than manual actions. Thus, in postentitlement operations, as in claims processing, decreasing the number of manually processed actions should further increase processing accuracy and timeliness. The reports we reviewed further showed that substantial errors in benefit rate recomputations and in administering the annual retirement test occurred during each of the six reporting periods. SSA aimed specific segments of the automated job stream at improving the processing of benefit recomputations and annual retirement test cases by more fully automating them. Resuming efforts to fully implement these Redesign changes successfully offers significant potential for further improving postentitlement operations through increased automation.

The automated job stream was the Redesign element having the greatest impact on benefit recomputations, but, as discussed in chapters 1 and 3, SSA had not successfully implemented major job stream segments at the time of our work.

As of November 1980, SSA was planning further efforts during fiscal year 1981 to stabilize the operations of the job stream segments that process postentitlement transactions.

During the Redesign, however, SSA added a segment of the job stream to the regular computer program used for processing benefit rate adjustments to reflect changes in the cost of living. Such adjustments represented 6 percent of all manual RSDHI actions. Using this segment in 1979 in processing cost-of-living adjustments eliminated 176,000 (35 percent) of the additional manual actions arising from questionable items detected during standard processing operations. Those actions otherwise would have had to be processed manually by program service center personnel. SSA could not use this job stream segment during the 1980 cost-of-living adjustment operation because of an attempted additional software modification and priority given to modifying another job stream segment. However, its future use could further reduce the number of additional actions that must be manually processed by program service center personnel.

The annual retirement test operation involved processing beneficiaries' annual earnings reports and work notices, preparing notices to beneficiaries regarding resulting benefit changes, and handling other events related to earnings limitations imposed on beneficiaries who continue to work. Streamlining the handling of these transactions could significantly improve overall postentitlement transaction processing because they have not only accounted for 10 percent of all RSDHI manual actions, but also served as the major source of overpayment adjustments--accounting for another 20 percent of total manual actions.

In March 1979 SSA replaced the existing computer program supporting this operation with a major segment of the automated job stream, which did not improve overall processing timeliness and accuracy in 1979. (See ch. 3.) However, proper development and implementation of this job stream segment had the potential for substantially improving timeliness and accuracy, since it automatically processed about 200,000 retirement test-related benefit adjustments which otherwise would have had to be processed manually at the program service centers for 1979.

General postentitlement processing could improve if certain Redesign changes were successfully implemented

Data from the MBR is required to process most postentitlement transactions, and as discussed above, the availability of summary MBR data online has probably helped speed up postentitlement operations. As in initial claims processing, successful implementation of the Redesign's provisions for reducing the time required to update the MBR using a single updating operation rather than multiple processes could further increase the timeliness and accuracy of these operations. As of November 1980, SSA was planning to establish this capability during fiscal year 1982.

Transmission of complete transaction history data over SSA's telecommunications system--planned under the Redesign--could further improve both the timeliness and accuracy of postentitlement actions by making past beneficiary account data more readily accessible and by eliminating the need to maintain this information in and retrieve it from hard-copy claims folders. SSA has indicated that significant additional ADP storage capacity would be needed before this capability could be implemented. As an interim step, however, SSA was planning as of November 1980 to work during fiscal year 1981 on placing some additional transaction history data in the MBR.

The proposed online edit and input validation capabilities of the Redesign's transaction control component could improve accuracy and timeliness in processing postentitlement actions, according to a program service center operations analyst. The primary benefit would appear to be improved timeliness through the immediate detection of defective input instead of waiting for automated exceptions to be generated by the system later in the processing cycle. As of November 1980, SSA was planning to resume work on this system enhancement during fiscal year 1981.

FIELD USERS STILL FAVOR THE REDESIGN

We discussed the impact of the RSDHI Redesign with key operations personnel at SSA's Mid-America and Southeastern Program Service Centers and selected local offices in the Kansas City and Atlanta regions. Although these personnel had experienced substantial problems with specific projects, their overall impression of the Redesign's potential was favorable.

Program service center personnel

In general, service center personnel we interviewed were optimistic about the potential improvements associated with the Redesign. They believed the Redesign was practical to implement and would be beneficial when in place, since it would improve quality by automating many of the more complex, error-prone manual actions. In this regard, service center operations officials told us that each of the five categories of new systems capabilities planned under the Redesign, 1/ if successfully implemented, should improve their claims and postentitlement processing operations.

At the same time, service center personnel complained about problems experienced as a result of certain RSDHI Redesign actions. For example, Southeastern center staff who participated in folderless processing cited substantial difficulties with unreliable telecommunications equipment and inadequate online MBR data during the experiment. Despite these problems, however, some believed the general concept behind this project was still valid. One told us she favored trying new ideas like folderless processing and another indicated a willingness to try the experiment again under improved conditions.

Service center personnel also noted that the automated job stream--especially the annual retirement test portion--caused them much additional work, as discussed in chapter 3. One manager told us the morale of the benefit authorizers suffered because of the frustration and confusion caused by the job stream. However, operations personnel pointed out that the unmodified annual retirement test computer program could not have processed the annual earnings reports for 1979 because of changes required by the 1977 Social Security Act amendments. They added that the processing of annual retirement test transactions by the automated job stream should eventually improve.

Local office personnel

In general, local office personnel spoke favorably about Redesign activities. In the opinion of one local office manager, the Redesign concept was valid, but local office personnel lacked the technical background needed to evaluate its practicality.

1/Discussed on pp. 5 and 6.

Some local office personnel expressed negative views on certain aspects of the Redesign. One complaint involved not receiving revised procedures in time to train technicians before new systems were implemented. The automated job stream also received negative assessments from some local office personnel. One service representative estimated that she referred 75 to 100 beneficiary notices to the program service center, asking the center to check payment accuracy and decipher the notices. She felt that portion of the job stream caused twice as much work for the local office in handling the annual retirement test workload.

Nevertheless, the improvements related to Redesign actions--such as online access to summary MBR data and benefit estimate information--impressed local office personnel. They cited reduced manual effort and faster processing as benefits resulting from these improvements.

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In summary, the RSDHI Redesign was appropriately directed toward improving time-consuming and error-prone program operations. Improvements in claims and postentitlement processing--both realized and potential--appear due at least in part to Redesign changes. Field office personnel apparently still favor the Redesign concept. The Redesign--if properly planned, designed, and implemented--still appears to be a promising means of improving service to SSA beneficiaries.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The RSDHI Redesign represented a major multifaceted ADP system modification project undertaken by SSA to improve service to program beneficiaries. SSA has invested substantial effort in this project since 1977, but it has been largely unsuccessful. Only one of the five major new features expected during the Redesign had been fully implemented successfully at the time of our work, and SSA had suspended further efforts to complete the project as it was originally planned. The agency was planning to resume work on certain individual Redesign elements during fiscal years 1981 and 1982.

Inadequate planning and management of the Redesign and deficiencies in SSA's system modification process appear to be the primary reasons that the agency was unable to successfully complete the Redesign. These deficiencies need to be corrected before SSA resumes working on major ADP system changes. Specifically, SSA did not:

--Adequately involve key field office users in planning Redesign changes to ensure that their needs would be met by the modified system. This lack of field user involvement also inhibited the development of functional requirements for the proposed Redesign changes that could serve as system performance criteria against which to validate the changes. Although the Office of User Requirements and Validation has taken steps intended to involve users more in all aspects of the system development/modification process, we believe these steps will still not achieve the degree of user involvement needed for successful implementation of major systems changes.

--Adequately analyze costs and benefits of the Redesign. Not all required ADP equipment and personnel costs were accounted for in the agency's cost/benefit analysis, and SSA never updated either the costs or savings data, despite substantial changes as the Redesign proceeded. This precluded SSA from using these data in monitoring Redesign progress and determining whether cost and benefit changes warranted continuing the Redesign.

--Provide for consistent management of the Redesign, as evidenced by the agency's combining Redesign activities with day-to-day systems operations, contrary to basic systems organizational concepts we have discussed in prior reports.

--Properly validate systems changes before beginning to implement them. Validation deficiencies included inadequate test case selection, failure to validate changes throughout the entire system, and premature implementation. SSA had not developed formal validation standards/procedures and adequate system performance criteria, failed to ensure that validators could control all system changes, and may not have allocated enough staff time to validating Redesign changes. Improper validation of the automated job stream resulted in substantial erroneous benefit payments, confusing beneficiary notices, and additional work for SSA field offices. SSA has issued interim validation guidelines and revised standards for helping users establish system performance requirements, but at the time of our work, it was too early to measure their effectiveness.

We also found that the Department of Health and Human Services' internal audit staff was not involved in reviewing the design and development of RSDHI system modifications and did not audit the system after Redesign changes were implemented. This inadequate involvement of the Department's internal auditors hurt the Redesign because agency management received no feedback on whether adequate automated controls had been built into the modified system or how effectively such controls were operating. Thus, SSA had no assurance that Redesign changes, once implemented, were producing consistently reliable and accurate results. Postimplementation audit and evaluation of these changes could have given SSA another opportunity to identify and correct serious modification deficiencies and to avoid many of the erroneous benefit payments, confusing beneficiary notices, and subsequent field office corrective actions which resulted.

We have cited most of these findings in prior reports discussing other ADP systems activities at SSA, which would seem to indicate that these weaknesses occur throughout the agency's ADP systems. We believe that SSA's system modification efforts in general will not meet their objectives until these weaknesses, which initially impeded successful implementation of the Redesign, are corrected. Accordingly, SSA

should take immediate, decisive corrective actions, including additional efforts to expedite and fully comply with the recommendations in our earlier reports.

It appears that SSA appropriately directed the RSDHI Redesign toward improving the processing of time-consuming and error-prone RSDHI operations, and we identified specific system processing improvements--some already realized--associated with it. SSA field office personnel we interviewed still generally favored the Redesign concept, despite the problems caused field offices by the improper development and largely unsuccessful implementation of the automated job stream. Thus, the Redesign--if properly planned, developed, and implemented--could further improve SSA service to program beneficiaries. In failing to successfully complete the Redesign, SSA not only missed an excellent opportunity to provide better service, but also expended substantial resources unnecessarily.

RECOMMENDATIONS

We recommend that the Secretary of Health and Human Services direct the Commissioner of Social Security to assure that major systems development/modification efforts, such as the RSDHI Redesign, are planned, developed, validated, and approved before implementation in accordance with generally accepted systems development/modification criteria. Specifically, we recommend that the Secretary direct the Commissioner to require:

--Quick finalization and implementation of detailed agency procedures for communicating with system users.

--Periodic updating, including revision of priorities, of the existing inventory of user needs to make sure it is current and accurate and can serve as a reliable basis for future development of system modification proposals.

--Periodic updating and modification of initial cost/benefit analyses for all major systems proposals, maintenance of accurate records of costs incurred and benefits realized to facilitate this updating, and use of these data to periodically reevaluate the merit of proceeding with the system change.

--Provision for project leaders of major systems development/modification efforts to be assigned full time to managing such projects and conducting them apart from daily systems operations.

--Revision of SSA's interim validation guidelines to include more detailed procedures and standards covering test case selection and inclusion of invalid data for testing program controls, testing changes throughout the system, determining the degree of processing accuracy that must be attained before implementation may proceed, and allocation of sufficient staff time to validating systems changes.

--Assessment of the independence maintained by systems validators from systems development staff, to make sure that they have sufficient control over program and systems changes, especially seeing that formal validation procedures are followed.

--Participation by all users in establishing the functional requirements for proposed systems changes to ensure that these requirements can serve as the system performance criteria against which validation is conducted.

We also recommend that the Secretary direct the Inspector General to increase efforts to establish sufficient ADP audit capability within the Audit Agency so that reviews of SSA's system development/modification process and ADP systems audits can be carried out effectively at SSA.

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