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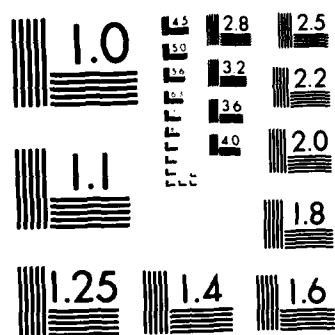
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GAO

United States General Accounting Office

Report to the Chairman, Committee on  
Government Operations  
House of Representatives

August 1986

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# ADP ACQUISITIONS

## SSA Should Limit ADP Procurements Until Further Testing Is Performed



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B-230361

August 8, 1986

The Honorable Jack Brooks  
Chairman, Committee on  
Government Operations  
House of Representatives

Dear Mr. Chairman:

This report responds to your February 18, 1986, letter requesting, in part, that we review the Social Security Administration's (SSA) Systems Modernization Plan to determine whether ongoing and planned computer procurements are fully justified and whether they will meet the requirements of the agency. As you requested, we plan to report in February 1987 on the entire review.

During this review, we focused on SSA's estimated \$343 million in hardware procurements. These procurements are major elements of an overall effort to develop a new system that is intended to improve major software applications, and data base management and access techniques. The procurements are intended to significantly increase the agency's automatic data processing (ADP) capacity. As currently structured, initial hardware commitments would increase the number of data communications terminals at least 500 percent (an optional quantity, if exercised, would result in a total increase in terminals of more than 900 percent), the data network capacity over 400 percent, and the host computer (a mainframe computer that is used to process the data communications workload) capacity by more than 650 percent.

In evaluating these procurements within the overall context of the system modernization effort, we found that they are not justified. It is not clear, for example, what needs these procurements would address, what potential mission benefits would result from the acquisitions, or whether alternatives have been adequately analyzed. In addition, while SSA is conducting tests to validate software to be used on this equipment, the tests will not provide an overall and thorough measure of projected performance of the fully deployed system.

Consequently, we believe that these procurements should be limited to only the equipment needed to test the total planned hardware configuration in conjunction with the major software components currently under development. The full complement of equipment should not be procured until and unless SSA conducts an evaluation of the total system over a

period long enough to obtain stable and complete results and subjects those results to a thorough review prior to committing to procurements for full system deployment. This will also allow SSA to generate the kinds of analyses required by federal regulations that support the need for such significant computer hardware purchases.

## Scope and Methodology

We conducted our audit work between March and June 1986 at SSA headquarters in Woodlawn, Maryland. We reviewed pertinent documents related to management and planning of systems modernization projects and procurements. GAO consultants provided technical analysis of documents supporting the terminal and data network procurements. We also interviewed key officials in the Office of Systems, Office of Management and Assessment, and Office for Operations. In addition we interviewed the integration contractor project manager responsible for SSA's modernization projects and reviewed integration contractor deliverables related to systems modernization.

In accordance with the requestor's wishes, we did not obtain official agency comments on a draft of this report although we did discuss our position on the procurements with key SSA officials. Except as noted above, we performed our work in accordance with generally accepted government auditing standards.

## Background

The Social Security Administration is now in the fourth year of an effort to build and maintain a modern computer environment. The effort, based on the Systems Modernization Plan, originated in 1982. The overall modernization effort is intended to improve service delivery in SSA's two primary programs—the Retirement, Survivors, and Disability Insurance program and the Supplemental Security Income program. The \$343 million in procurements reviewed reflect the plan's intention to replace and substantially expand (1) the current data communications network, (2) the number of data communications terminals in Social Security's field locations, and (3) the host computers servicing those terminals at the SSA central computer facility. The majority of these procurements are to be committed by the end of fiscal year (FY) 1986 and the first 6 months of FY 1987.

In addition to these hardware procurements, other elements of the plan are intended, among other things, to (1) redesign and develop major software applications, (2) develop administrative and management information systems, (3) install microcomputers throughout the agency

to support administrative and management functions, and (4) develop an integrated data base management system.

In 1982, SSA estimated that the effort would cost approximately \$479 million and be completed in 1987. Since 1982, Social Security's planned expenditures have steadily grown, and it now reports that actual and planned modernization expenditures through FY 1990 will total \$990 million, which includes the \$343 million in hardware procurements. The growth in planned expenditures is partially attributed to SSA's intention to expand ADP equipment throughout the organization beyond the original plans. The increase also reflects the addition of two programs. In 1983, SSA added the System Operation Management program, and in 1984 it added the Administrative Management Information Engineering program. Further, as of August 7, 1986, agency officials have confirmed proposed expenditures totaling \$91.4 million for site preparation and new furniture, which will bring the total through FY 1990 for the modernization program to \$1.08 billion, or more than double SSA's original estimates.

### Planned System Modernization Procurements Are Not Justified

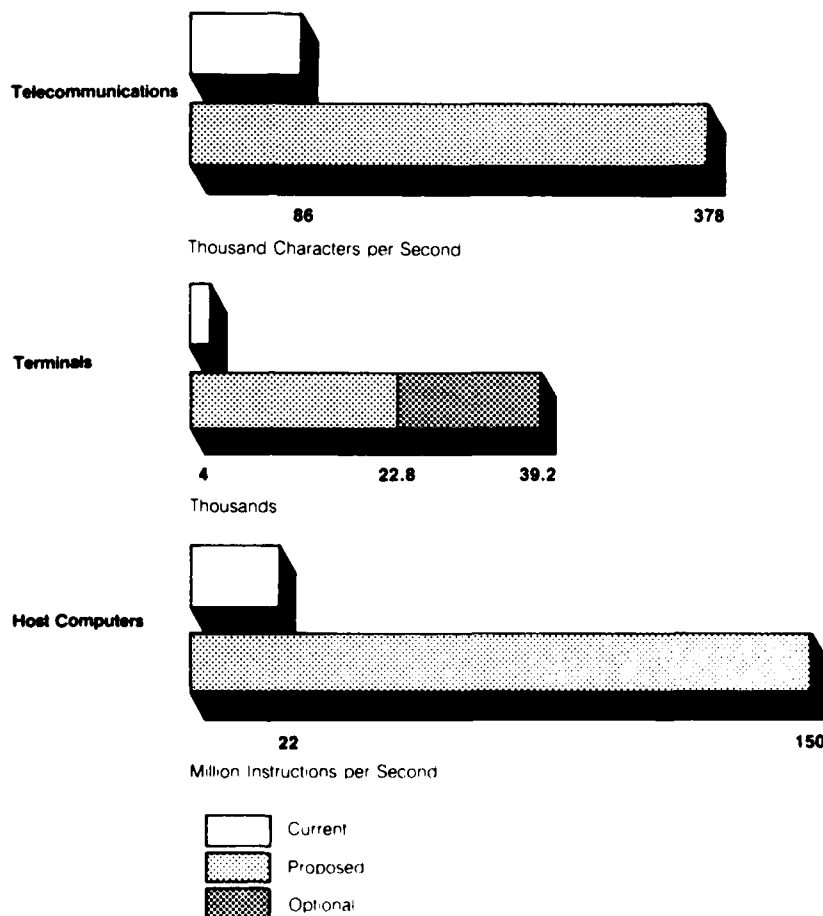
Social Security's initial acquisition strategies in 1982 were directed at correcting well-documented and serious deficiencies in the agency's ADP system that were affecting agency operations and service delivery. At that time, obsolete central computers and inefficient data storage techniques were creating delays in the processing of individual annual wage earnings and in the issuing of benefit payments. Also, it was time-consuming for field offices to access information at the central computer facility. By 1984, the agency had successfully corrected these deficiencies by upgrading the obsolete computers and converting many computer files from tape to disk storage. Since 1984, Social Security has carried out incremental upgrades of this equipment to prevent a recurrence of the 1982 crisis.

SSA now plans to move ahead with approximately \$343 million in system modernization equipment procurements. Unlike a stated, governing strategy of the systems modernization plan—to achieve modernization through incremental and evolutionary improvements—these procurements would significantly increase the quantity of terminals, the capacity of the data network, and the capacity of the host computers (see figure 1).



A-1

Figure 1: Current Vs Proposed Capacity



### Current Conditions Do Not Support Large Scale Procurements

Unlike the efforts of 1982, which were aimed at extricating the agency from a crisis in its ADP operations, these planned procurements are not supported by documented deficiencies in current ADP operations. To the contrary, it appears that current conditions do not support the need to make these large scale ADP hardware procurements.

While SSA has not solved all of its service related and operational efficiency problems, there are no indications that these problems are so severe as to justify these specific, large scale procurements. For example, computer backlogs that created delays in the processing of individual annual wage earnings and in the issuing of benefit payments no longer exist. In 1982 it took the agency up to 6 weeks to issue a Social

Security card, 3 years to credit a worker's earnings, and 4 months to implement the annual cost of living increase in benefits. Through systems modernization, the agency now states that it issues Social Security cards in 11 days, credits wage earnings within 9 months, and processes cost of living increases in 2 days.

Second, SSA reported to the House Appropriations Committee in March 1986: (1) high payment accuracy rates for the retirement and survivors program, (2) reduced processing backlogs in many areas, and (3) improved timeliness of initial retirement and survivors claims payments. Further, a recent GAO report indicated that the public generally perceived many of the services it received to be of high quality and good or better than service received from other agencies.<sup>1</sup>

#### Procurements Do Not Comply With Regulations

Further evidence of the lack of a clear justification for these procurements is found in SSA's inadequate documentation for these procurements. Federal procurement regulations<sup>2</sup> require that the need for data processing resources be supported by an analysis that includes functional requirements (the user's stated major performance objectives of a system's software), workload projections, alternative analyses, and cost/benefit analyses. The regulation reflects accepted industry practice, and is embodied in executive branch guidance to agencies.<sup>3</sup>

Although Social Security had prepared documents that address these regulations for the data communications terminals, data network, and host computer procurements, we found them to be deficient. Specifically, SSA did not:

- Identify and document the specific mission benefits that would occur as a result of the acquisitions. Regulations require an analysis to be performed that relates ADP acquisitions to current mission deficiencies or needs.
- Complete all functional requirements for the system components and validate these requirements with the user community prior to selecting

<sup>1</sup>Quality of Services Generally Rated High by Clients Sampled. GAO. HRD-86-8. January 1986.

<sup>2</sup>Federal Information Resources Management Regulation, Part 210-30, Management of ADP Resources.

<sup>3</sup>OMB Circular A-109, Major Systems Acquisitions.



an ADP system. SSA did conduct a top-down analysis<sup>4</sup> of its requirements that provided a framework for future systems development. However, as we verified in this review, the agency has only completed the functional requirements for processing initial claims data for the Retirement, Survivors, and Disability Insurance program. Defining the remaining functions for this program, such as a change in beneficiary status and all the functions for the Supplemental Security Income program, is not scheduled for completion until December 1986—approximately 2 years after equipment needs were determined. As a result, SSA's ability to determine the optimal mix of system components has been hampered. For example, SSA attempted to determine the optimal ADP system by conducting workload analyses for a number of requirements that had not been defined or validated. As a result, the three workload projections that were performed to support the size of the system components produced conflicting estimates. Specifically, a critical workload element of the system—transaction per terminal per hour—has been estimated in one study to be 10.8 and in another to be 36.4.

- Perform a comparative cost analysis of alternative solutions before proceeding with system procurements. We found that SSA lacks a clear understanding of whether its chosen approaches to the data network and host computer procurements are the most effective and least costly. For example, SSA's comparative cost analysis for the host computers presented 10 alternatives, but the agency rejected each one with a short statement. Based on this limited analysis, SSA concluded that the acquisition of three host processors is the "most feasible and cost effective choice" without having developed and analyzed the feasibility or costs of any of the stated alternatives.
- Prepare an analysis that compares all costs with associated benefits of the alternative selected. Instead, the agency's analysis was limited to a partial cost analysis. For example, the cost/benefit analyses for the data network (including terminals) and host computer procurements were limited to cost analyses. Benefits—such as satisfying mission needs or improving service to the public—were not included. In addition, site preparation costs of \$26.9 million and furniture costs of approximately \$64.5 million were not considered in any of the related cost/benefit analyses.

In discussing these analytical deficiencies with agency officials, they stated that the prolonged acquisition cycle of 18 to 24 months required

<sup>4</sup>SSA describes the analysis as interviews with managers and staff throughout SSA, from the "top" on "down," to get a picture of the agency's business processes and its general information and computer support requirements.

the procurement decisions to be made before all the supporting documentation—such as functional requirements—was completed. We do not agree. Rather, we believe that a plan the size and complexity of Social Security's should adhere to regulations, which coincide with accepted system development methodology, to (1) provide assurance that the procurements will meet the needs of the agency and (2) fully justify the expenditures of Social Security trust funds.

## **Planned Hardware Acquisitions Would Not Be Tested Adequately**

For major system procurements, the Federal Information Resources Management Regulation requires agencies to assess ADP equipment capability and to validate system performance. Specifically, agencies are required to use validation techniques (tests) to reduce risks that: (1) insufficient capacity or degraded ADP performance may adversely impact the accomplishment of agency mission needs or (2) excessive capacity or capability may be uneconomical. SSA's current test strategy, which would validate software only and not the total configuration being procured, will not provide an adequate test of the proposed system's capability and performance prior to the total commitment of funds.

To evaluate the ongoing software development of the Systems Modernization Program, SSA has established a test program in 20 pilot offices. This test program, also known as the "Claims Modernization Project-Field Office Systems Enhancements," is the beginning of field automation initiatives under the Systems Modernization Plan. The tests are being conducted at 20 SSA field offices and are designed to validate new or revised software programs to ensure that the programs are accurate, comprehensive, and adaptable to field operations.

While the test program that SSA is following will help validate its software for processing initial claims, it will not determine whether:

- the fully configured system can be expected to meet performance objectives, such as a 5-second user response time;
- any improvements in the quality of service delivery will be realized;
- pilot test revisions should be made, followed by further testing in the event that unanticipated problems arise in testing hardware and software components in a fully configured system; and
- plans for the full system should be revised prior to a large scale hardware commitment.

The current SSA strategy calls for the procurement of the full complement of equipment—data communications terminals, data network, host computers—without conducting a comprehensive test of the proposed configuration of the hardware and functional components (software applications) under development. We believe that this strategy is limited and risky because it will only evaluate individual hardware and software components in a piecemeal fashion, rather than provide for an overall and thorough measure of projected performance as a fully deployed system.

In the past, SSA and others have experienced difficulties after awarding contracts for the total complement of ADP system components that did not function as intended within the total system. For example, in August 1984 GAO reported that SSA experienced considerable problems with its last major data communications equipment procurement.<sup>5</sup> Specifically, SSA did not conduct an adequate pilot test of the equipment within the total ADP system before awarding the contract for the full complement of equipment. As a result, SSA received equipment that was plagued with problems that adversely affected service to the public for at least 2 years after installation.

In another case, the Internal Revenue Service (IRS) awarded a contract for \$131 million in computer equipment for its service centers that was not adequately pilot tested; consequently, several significant, unanticipated problems occurred. Specifically, in September 1985, GAO reported that IRS service centers in Austin, Texas and Fresno, California experienced problems that hampered their ability to effectively and efficiently manage and control their workloads during the first several months of 1985.<sup>6</sup> Among other things, the problems dealt with (1) insufficient capacity of the newly introduced computer system; (2) inefficient computer software for the computers; and (3) unfamiliarity on the part of service center employees with the new computers and its newly introduced input systems. Due to these problems, the service centers had difficulty processing tax returns timely, controlling the flow of tax returns as they moved through the processing stages, and keeping other processing case inventories at a manageable level.

<sup>5</sup>Additional Information on the SSA Management of Data Communications Contracts with Paradyne, GAO IMTEC-84-23, August 27, 1984.

<sup>6</sup>Information on IRS Service Centers in Austin, Texas and Fresno, California, GAO GGD-85-89, September 30, 1985.

To reduce the risk of incurring such problems, OMB Circular A-109 suggests that, prior to organizations' pursuing full production of a system design concept, systems performance be satisfactorily tested and evaluated in expected operational conditions. Despite the added safeguards that total systems testing would provide prior to a major capital investment such as SSA's, the agency plans to proceed with little knowledge of how the individual components will operate as a total system.

## Related Issue

As part of SSA's modernization effort, the agency has planned to replace its current data communications terminals and data network architecture with a network that would be easily adaptable to future changes in processing requirements. Since 1984, GAO has reported on SSA's current network and its plans to replace it.<sup>7</sup> We concurred that the new network should be pursued, but also recommended that SSA adequately justify the then-proposed addition of 17,000 new terminals and conduct appropriate performance testing. As we state in this report, SSA has not adequately justified the acquisitions to significantly increase its data communications terminals, data network, and host computer capacity.

However, once pilot testing has demonstrated the reliability of the data communications terminals and data network configuration, SSA could procure enough data terminals and data network capacity to phase out its current terminals and data network in the non-pilot field locations. This approach offers several immediate benefits. First, SSA would realize a lease cost savings of approximately \$9 million annually by replacing the current data communications terminals located in all field locations. Second, the approach would eliminate the need to operate two separate data networks while the agency conducts further testing in its pilot offices of the hardware and software being developed. Third, and most important, it would allow SSA to install the new network that, unlike the current network, will use an industry-supported network design, which could easily be expanded based on the results of the pilot test.

## Conclusions

In 1982, SSA faced well-documented and serious deficiencies in its ADP systems that were hampering its operations, including its ability to serve

<sup>7</sup>Social Security Administration's Data Communications Contracts with Paradyne Corporation Demonstrate The Need For Improved Management Controls, GAO IMTEC-84-15, July 9, 1984; Social Security Administration's Progress in Modernizing Its Computer Operations, GAO IMTEC-85-15, August 30, 1985; Social Security Administration's Computer Systems Modernization Effort May Not Achieve Planned Objectives, GAO IMTEC-85-16, September 30, 1985.

the public. The concept of SSA's system modernization plan—a continuing planning effort aimed at ensuring that the agency's ADP operations stay current—is to be commended. As a result of this effort, SSA's ADP-related effectiveness has improved significantly compared to 1982 levels. In fact, evidence now suggests that in some cases SSA's ADP operations are providing acceptable levels of service to its client beneficiaries. In view of this, it is difficult to understand SSA's eagerness to move forward with major hardware acquisitions totaling \$343 million, especially when these acquisitions are not supported by clear analysis. This is particularly significant because the analysis (1) is required by regulation as well as reflective of accepted industry practice and (2) represents basic evidence that a particular action or program is justified.

We believe that SSA can and should better identify its computer needs and justify its strategy for meeting those needs before proceeding with these large-scale hardware commitments. In doing this, SSA can use its field office pilot program, now being used on a limited basis to test software development and to determine that hardware to be acquired will address operational needs and operate as expected within cost and schedule estimates. Such testing is necessary to mitigate the risk of making unnecessary or premature capital investments.

## Recommendations to the Secretary of Health and Human Services

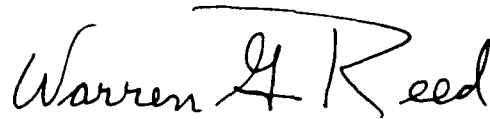
To ensure that SSA's valid computer needs are met without making unnecessary expenditures, the Secretary should direct the Commissioner of Social Security to

- limit future contractual commitments of funds until SSA assesses, justifies, and documents projected ADP requirements, alternatives to meeting the requirements, and the associated benefit to SSA's mission, which should result in a clarification of SSA's equipment needs;
- limit the acquisition strategy for the terminals, data network and host computers to support only the full installation of equipment at the 20 offices designated as pilots by SSA; the pilot should provide SSA the opportunity to more adequately assess its needs; and
- replace the existing terminals and network in the remaining field offices once the testing of equipment reliability is complete; this approach should result in substantial lease cost savings and put in place a standard, industry-supported network that can be easily expanded.

Unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from its issue date. We will then

send copies to the appropriate House and Senate Committees; the Secretary of Health and Human Services; the SSA Commissioner; the Administrator of General Services; the Director, Office of Management and Budget; other appropriate heads of departments and agencies; and other interested parties.

Sincerely yours,

A handwritten signature in cursive script that reads "Warren G. Reed". The signature is written in dark ink and is positioned above the printed name and title.

Warren G. Reed  
Director

END

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