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REPORT TO THE CONGRESS



LM095902

Increased Efficiency Predicted If
Information Processing Systems
Of Social Security Administration
Are Redesigned B-164031 (4)

*BY THE COMPTROLLER GENERAL
OF THE UNITED STATES*

~~701941~~

095902

APRIL 19, 1974



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-164031(4)

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To the President of the Senate and the
Speaker of the House of Representatives

This is our report entitled "Increased Efficiency
Predicted if Information Processing Systems of the Social
Security Administration are Redesigned."

We made our review pursuant to the Budget and Account-
ing Act, 1921 (31 U.S.C. 53) and the Accounting and Auditing
Act of 1950 (31 U.S.C. 67).

We are sending copies of this report to the Secretary
of Health, Education, and Welfare, and to the Commissioner,
Social Security Administration.

A handwritten signature in cursive script that reads "James B. Axtell".

Comptroller General
of the United States

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D I G E S T

WHY THE REVIEW WAS MADE

Several new programs for the Social Security Administration (SSA) have ²⁶ recently been widely discussed and, in some cases, proposed in the Congress, including:

- National health insurance ✓
- Family Assistance Program ✓
- Catastrophic medical coverage ✓
- Supplemental Security Income ✓
for the aged, blind, and disabled (passed Oct. 1972).

Enactment of these programs, plus continued changes to the Social Security Act, impact on and could tax SSA's ~~automated information processing systems~~. GAO reviewed these systems because they process claims which result in the issuance of benefit checks--the only income for many aged or disabled. GAO wanted to know whether SSA's automated information processing systems have remained current with rapid changes in the state of the art of data processing.

FINDINGS AND CONCLUSIONS

Frequent changes in legislation affecting social security programs in recent years have greatly increased the workload of SSA's information processing systems. Its inventory of computers has grown from 3 in 1960 to 51 in 1973. SSA's equipment had an installed value of

\$61 million as of March 1973 and the annual cost to operate the systems exceeded \$60 million.

According to SSA, work pressures have prevented it from doing much of the redesign work necessary to take full advantage of today's computer technology and to provide for increases in efficiency of its information processing systems. (See p. 8.)

Thousands of SSA's computer programs have been rewritten to operate on third-generation computers. Such rewriting, however, does not take full advantage of the capabilities of these new computers. (See p. 11.)

Third-generation computers are built to take advantage of direct access processing; first- and second-generation equipment generally used serial processing. Serial processing involves processing data files in a specific sequence. (See p. 11.)

For example, if a file consists of 1,000 items in ascending numerical sequence from 1 to 1,000 and a change is to be made to item 669, the computer must first run through all preceding numbers. With direct access processing, the computer can select an item and make the change without having to run through preceding numbers. (See p. 11.)

Data file statistics indicate

that direct access processing would improve the system's efficiency. For instance, in one case only 1.6 million of 212 million items, or 1 of 33, need to be changed. Yet, all items must be run through the computer to change the 1 of 33. In a second case, 175,000 out of 36.5 million items, or 1 in 206, need to be changed. The computer must run through all 36.5 million items to change the 175,000. (See p. 13.)

Potential benefits of redesigning SSA systems are difficult to quantify, either in terms of dollars or improved service, without analyzing and planning the redesign effort. GAO believes, however, the effort would be worthwhile and could produce savings. (See p. 17.)

GAO based its conclusion on the size of the current information processing systems, their potential size in the future, the low activity rate of the files, and SSA's planned expenditures of over \$39 million for additional data processing equipment.

Redesigning information systems will be difficult because of the

- interrelationships between the functions of the various offices and bureaus (see p. 17),
- complexity and magnitude of the operations (see p. 17),
- anticipated continued growth in workload (see p. 17),
- need to maintain a high level of public service while new systems are being designed (see p. 17),

--frequent congressional changes to the Social Security Act (see p. 17), and

--anticipated enactment of new legislation making SSA responsible for administering new programs (see p. 17).

RECOMMENDATIONS

To help deal with the difficulties in redesigning information systems, GAO recommends that SSA:

- Establish long-range goals and objectives to guide the system designers in integrating functions of different offices and bureaus. (See p. 18.)
- Establish an expert system planning group, freed from changes caused by day-to-day operations and legislative changes, to design and develop new information processing systems which will take full advantage of the technological capabilities of modern computers. (See p. 18.)
- Direct the system designers to make an in-depth examination of alternative methods for storing, maintaining, and processing SSA data files and programs--methods that are operationally beneficial and technically feasible. (See p. 18.)

AGENCY ACTIONS

The Department of Health, Education, and Welfare (HEW) generally agreed with the report and with GAO's recommendations. According to HEW, SSA is already acting on the recommendations. (See p. 18.)

MATTERS FOR CONSIDERATION
BY THE CONGRESS

SSA's automated information processing systems directly affect the lives of a large segment of our population through the issuance of benefit payments and thus affect

the general welfare. This report provides information on SSA's automated information processing systems and the actions needed to improve them. GAO believes it will be helpful to congressional committees having oversight responsibilities and those considering new programs for SSA.

CHAPTER 1

INTRODUCTION

The Social Security Act, as amended, (42 U.S.C. 401 and 1395) charges the Social Security Administration (SSA) with administering the Nation's major social insurance programs, including retirement, survivors, disability, and health insurance. The basic objectives of these insurance programs are to

- provide cash benefits to replace, in part, earnings that are lost to individuals and families when earnings stop or are reduced because the worker retires or dies;
- protect individuals and families against the risk of economic loss resulting from long-term disability by providing income to severely disabled workers and their dependents; and
- provide protection against the cost of health care for the aged and severely disabled.

The Federal Coal Mine Health and Safety Act of 1969 (30 U.S.C. 901) made SSA responsible for administering the Black Lung Benefits Program.¹ With enactment of the Social Security Amendments of 1972 (86 Stat. 1329), on October 30, 1972, SSA was given the additional responsibility of administering title XVI of the Social Security Act which, effective January 1, 1974, provides for a national program for paying supplemental security income to the aged, blind, and disabled.

In administering the Nation's major social insurance programs, SSA's primary responsibility is to serve the public and its eligible beneficiaries. SSA's major goals are promptness and accuracy--the right check, to the right person, at the right address, on time.

¹With some exceptions, the Department of Labor will administer the Black Lung Benefits Program beginning in 1974. SSA, however, will pay benefits for which it is responsible as long as the beneficiaries remain eligible.

SSA has extensively used automatic data processing (ADP) equipment and techniques to do its mission. In 1972 SSA had an inventory of 49 computers and operated one of the Nation's largest data processing centers at the central office in Baltimore. Here records are established and maintained of the wages paid to, and the self-employment income derived by, each individual covered by the act. These records serve as the basis for paying benefits under old-age retirement, survivors, disability, and health insurance programs. SSA's principal operations include

- establishing Social Security identification records,
- maintaining earnings records,
- certifying earnings records and benefits computations,
- establishing and maintaining beneficiary records,
- identifying and enrolling individuals in the health insurance program for the aged, and
- maintaining health insurance benefit-use records.

SCOPE OF REVIEW

We obtained a recognized ADP authority to assist in reviewing SSA's information processing systems management. We did most of the review work at the central office in Baltimore and visited the Kansas City Payment Center. We paid particular attention to SSA's information processing systems design and its long-range planning function as it relates to systems development and design.

The review included discussions with SSA management personnel at both the top and intermediate agency levels, analysis of SSA workload statistics, and review of justifications for equipment acquisitions in recent years as well as other files and records related to the data processing functions.

CHAPTER 2

REDESIGN OF INFORMATION PROCESSING SYSTEMS

OFFERS POTENTIAL FOR IMPROVED EFFICIENCY

SSA's information processing systems have been developed over a number of years during which frequent legislative changes increased SSA's mission and workload. These increases in workload required new data processing equipment and frequent modification of SSA's information processing systems. Because of tight deadlines, SSA modified many existing computer programs rather than totally redesigning the systems. The systems do a creditable job, but redesigning them to use modern technology could make the systems more efficient and thereby reduce costs.

SSA's inventory of computers grew from 3 in 1960 to 49 in 1972. These computers and related equipment had a value of \$61 million as of March 1973. Computer operating costs are currently about \$60 million a year. SSA plans to spend over \$39 million to acquire new equipment during 1974 to 1978.

Because of SSA's substantial ADP operations, we believe that it should try to redesign its systems to gain the full potential from advanced equipment it currently uses and plans to acquire. Our specific recommendations are on page 17.

SSA ENVIRONMENT IS ONE OF FREQUENT CHANGE AND WORKLOAD EXPANSION

The history of this country's social insurance programs is one of change and expansion. SSA has been required to respond to frequent legislative changes which have not only modified the original Social Security Act but also, in some cases, have considerably expanded the agency's basic mission. SSA has had to implement legislative changes with little advance notice in a short time. For example, in 1965 the health insurance programs were enacted and SSA was

required to have these massive new programs working within a year.

From enactment of the original social insurance programs in 1935 until the early 1960s SSA's workload steadily increased. During the middle and late 1960s SSA's growth was rapid. The enactment of the health insurance programs in 1965 and the Federal Coal Mine Health and Safety Act of 1969 are examples of new programs which increased SSA's mission and workload. Legislation which required changes in computations of benefits, financing provisions, earnings tests, and eligibility requirements were also enacted.

These legislative changes often required full concentration of SSA's planning and system design resources--leaving little resources for redesigning previously developed systems to make them more efficient.

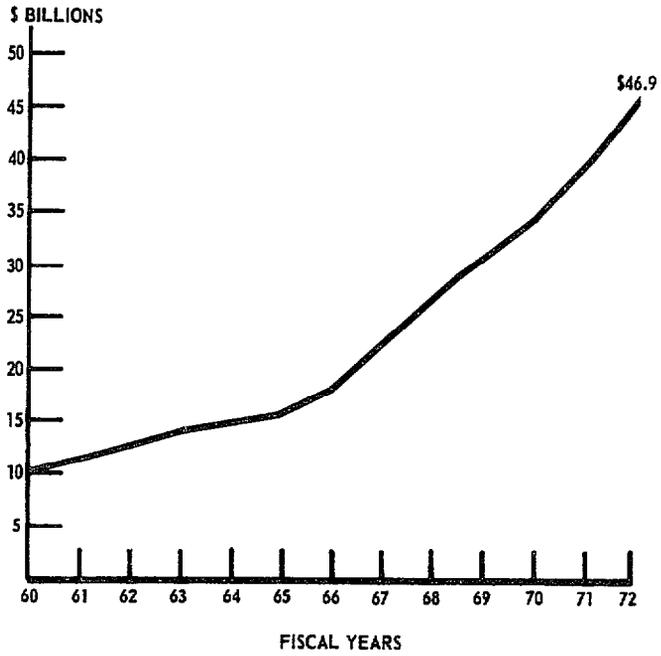
As shown in the graphs below, social security numbers issued and the amount of retirement, survivors, disability, and health insurance benefits paid annually have steadily increased. In fiscal year 1972, 7 million new account numbers were issued and over 1 million new beneficiaries began receiving benefits.

Functioning in this environment of change and growth, SSA has generally received high marks from the Congress and others in administering retirement insurance and other cash-benefit programs. Normally, benefit checks are processed on time and requests for earnings information and inquiries on possible benefits are handled expeditiously.

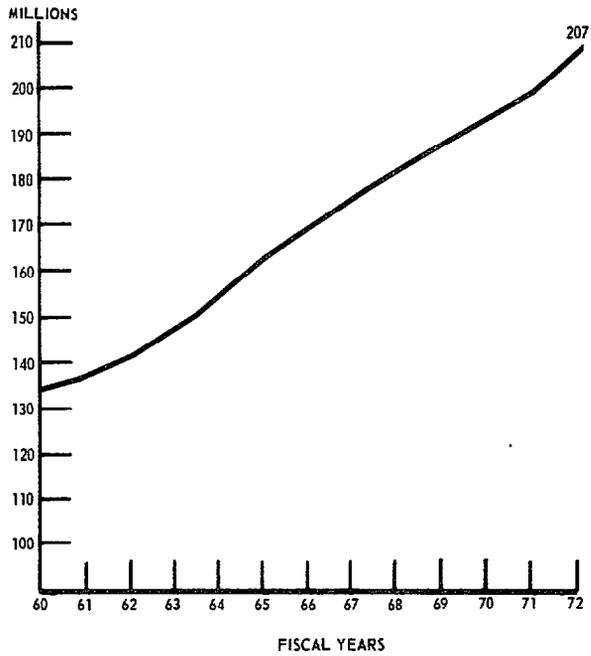
EARLY LEADERSHIP POSITION OF SSA IN ADP

SSA, having acquired a first-generation computer in 1956, was a leader in the early use of computers and automated information processing systems. SSA's information processing systems designed during the late 1950s took advantage of this equipment's speed and information processing capability and were at the forefront of electronic data processing technology of the time.

BENEFIT PAYMENTS FISCAL YEARS 1960-72



CUMULATIVE NUMBER OF SOCIAL SECURITY NUMBERS ISSUED FISCAL YEARS 1960-72



WORKLOAD INCREASES MET BY ACQUIRING
MORE MODERN EQUIPMENT

As the SSA workload increased--more people with account numbers, more benefits being paid, and more new programs--it became increasingly difficult to process the large workload. At the same time, computer manufacturers introduced so-called second-generation computers. In the early to mid-1960s, SSA began acquiring this new, faster, more powerful equipment to help process the increased workload.

SSA's problem was resolved only temporarily because the workload continued to increase into the 1960s. By the mid-1960s computer manufacturers had introduced new third-generation computers which were much faster and more capable than second-generation equipment. Beginning about 1965, SSA began acquiring these third-generation computers to help process the continually increasing workload.

GROWTH OF SSA'S ADP RESOURCES

By 1972, SSA's large inventory of equipment included 39 third-generation computers and several older model computers. SSA's computers, plus required peripheral devices, had an installed value of almost \$61 million as of March 1973. The annual cost of operating SSA's information processing systems is over \$60 million. The growth in SSA's data processing resources is illustrated in the chart below.

Trends in SSA Data Processing Resources
Fiscal Years 1960 and 1972

	<u>June 1960</u>	<u>June 1972</u>
Computers	3	^a 49
Computer programs	92	5,000
Magnetic tapes	4,000	207,000
Magnetic disks	-	806

ADP Personnel
Fiscal Years 1960 and 1972

ADP technicians:		
Systems analysts	59	190
Programers	90	705
Computer operators	9	123

^aIn August 1973, SSA's computer inventory stood at 51.

ADVANCED COMPUTERS OBTAINED
BUT SYSTEMS NOT REDESIGNED

Traditionally, SSA has acquired additional computers when existing equipment could no longer carry the increased workload. However, in many cases, information processing systems were not redesigned to take advantage of the new equipment's speed and processing capabilities. Systems that originally were designed for the first-generation computers were applied to second-generation equipment. When large-scale, third-generation computer systems were installed, the first-generation systems operating on the second-generation machines were processed on the new computers.

The new equipment can process systems designed for older equipment much faster and at less cost. Significant benefits may be achieved this way--even without systems redesign--but the new equipment does not operate at top efficiency.

Information systems that employ digital computers fall into one of two modes--serial processing or direct access processing. Serial processing, which was common with the first- and second-generation computers introduced during the 1950s and early 1960s, involves processing records and files which are in a specific sequence. For example, a file may consist of 1,000 records in ascending numeral sequence from 1 through 1,000. If record 669 is to be changed, the computer must first run through all preceding records. With direct access processing, however, the computer can select 669 directly and make the change without having to run through preceding records. Direct access processing can be handled efficiently by third-generation computers.

Thousands of SSA computer programs have been rewritten to operate on third-generation computers, but few systems have been redesigned. As a result, SSA is operating first- and second-generation, serial-type, information processing systems with highly advanced, third-generation computer equipment. This equipment is designed to efficiently process data stored on magnetic disks; however, SSA's major systems are primarily tape-oriented, serial-processing types.

SSA's inventory of over 200,000 reels of magnetic tape demonstrates the extent of its use of serial-processing systems. Three major SSA files require a large number of reels as illustrated in the following table.

<u>Major computerized files</u>	<u>Number of tape reels</u>
Earnings Master	1,400
Master Beneficiary Record	800
Health Insurance Record	<u>240</u>
Total	<u>2,440</u>

HEW advised us that third-generation computer technology has many advantages which SSA is effectively using, including multiprograming and multiprocessing, and that SSA has tried to minimize the inefficiencies in serial processing.

According to HEW, alternatives to magnetic tape storage will soon be available. SSA intends to keep abreast of these and other developments and is prepared to modify its systems.

LOW FILE ACTIVITY RATE

The economies of file processing, whether serial or direct access, depend on the system, making it difficult to generalize as to when direct access systems should be used. However, one factor that frequently points to the desirability of a direct access system is the activity rate of the file.

The activity or update rate of a file may be defined as the number of changes or update records divided by the total number of records in the file. This activity rate is frequently expressed as a percent. For example, if 10 records in a file of 100,000 records are to be updated, the activity rate is 0.01 percent. Since a tape file processed serially must be read in its entirety when even a single record is updated, it is relatively expensive to process tape serial files at very low activity rates.

It is difficult to tell how much is saved by using direct access processing since the exact cost per change or update depends on file size, record size, blocking factor, capability of the computer used, and other technical considerations. However, having low activity rates of serial files stored on magnetic tape is not usually economical. Most data processing experts agree that, if the activity or update rate of a file is very low, the possibility of developing a direct access system should be thoroughly investigated.

SSA records show that, for certain major systems, between 1 and 2 percent of the records on a given master tape file are updated. However, because serial processing tape systems are used, the computer must search all records on the file to find the few to be updated. Using modern computer technology could permit direct access to the records to be updated without searching all other records. SSA provided information which we used to compute the daily update rate for three major tape files as shown in the following table.

Major computerized <u>file</u>	<u>Daily Update Rate</u>		Daily account activity (percent)
	<u>Number of accounts</u>	<u>Daily account activity</u>	
	----- (millions) -----		
Earnings Master	212	1.6	0.75
Master Beneficiary	36.5	.175	.48
Health Insurance Record	32.1	.6	1.9

The activity rate is the critical factor but other factors to be considered when assessing serial and direct access processing include

- required system response time,
- size of the file in terms of total number of records and total characters of data (both present and projected),
- integration or interdependence of the files,

--security requirements of the file, and

--cost of various systems.

CONTINUED FUTURE GROWTH FOR SSA

SSA's task in administering the Nation's social insurance programs is large by any measure and has spawned massive information processing systems. According to SSA, proposals for new programs have been introduced in the Congress, which, if made law, will further expand SSA's mission and substantially increase the amount of work to be done. Changes to the present Social Security Act are also expected, resulting in a larger workload.

Two examples illustrate SSA's large workload. In fiscal year 1972 SSA issued about 7 million new social security numbers, and its computer systems were used to post over 343 million earnings items. From 1973 to 1980 SSA expects to process almost 50 million applications for new social security numbers. The number of earnings items posted annually is expected to increase to over 439 million in 1980.

Although it is difficult to predict the extent of future growth, it is apparent that SSA's information processing systems will grow even larger. On the basis of information SSA provided, we estimated the future size of three major files and the minimum number of tapes that would be required for each.

<u>Major computerized file</u>	<u>1973 number of records</u>	<u>1979 estimated number of accounts</u>	<u>1973 reels of tape</u>	<u>1979 estimated reels of tape</u>
	(millions)			
Earnings Master	212	260	1,400	1,720
Master Beneficiary Record	36.5	53	800	1,200
Health Insurance Record	32.1	42.5	240	350

By any measure, these files will be massive and could present storage and processing problems. Even if advancing technology allows more records to be stored on a reel of tape, the files will still be large. If disk storage were used, many disks would also be required. Processing a large number of tapes or disks could be a burden on SSA's current information processing systems.

ADDITIONAL COMPUTERS

To avoid problems in processing a growing workload, SSA plans to acquire additional ADP equipment. Preliminary plans show that it expects to spend \$39 million between 1974 and 1978 for new computers and related equipment at the Baltimore central office to supplement, and in some cases replace, computer and peripheral equipment currently installed.

SSA anticipates that the new equipment will be needed to (1) process increases in workload in current ongoing programs, (2) process workloads relating to new legislation, (3) exploit new technologies which will enhance operating capabilities, and (4) replace obsolete or nonrepairable equipment. SSA assumed that its workload will increase due to:

- A steady increase in data processing work for the present Old Age Retirement and Survivors Program, Disability Insurance Program, and Health Insurance Programs.
- Additional workloads resulting from the possible enactment of the Adult Assistance Program.
- New and heavy workloads resulting from the possible enactment of legislation in the broad area of national health insurance.

SSA provided the following chart indicating planned yearly expenditures for new ADP equipment through 1978.

<u>Fiscal year</u>	<u>Purchase</u>	<u>New rental</u>	<u>Total</u>
	----- (000 omitted) -----		
1974	\$ 1,967	\$ 8,670	\$10,637
1975	132	4,265	4,397
1976	856	4,962	5,818
1977	234	8,652	8,886
1978	<u>10,000</u>	<u>38</u>	<u>10,038</u>
	<u>\$13,189</u>	<u>\$26,587</u>	<u>\$39,776</u>

According to SSA the forecast extends well into the future. These figures no doubt will change as time goes by, depending mainly on future legislation and systems planning decisions.

CHAPTER 3

CONCLUSIONS, RECOMMENDATIONS, AND AGENCY ACTIONS

CONCLUSIONS

SSA's information processing systems are large. Redesigning the systems to take advantage of third-generation computer technology in areas where it has not been applied would produce more efficient systems which are also likely to be less costly. It would not be practical to quantify these savings until much of the planning work necessary for the redesign has been completed.

Redesigning SSA's information processing systems will be difficult because of the:

- Interrelated functions of various offices and bureaus.
- Complexity and magnitude of operations.
- Expected growth in workload.
- Need to maintain a high level of public service.
- Continued frequent changes to the Social Security Act.
- Anticipated enactment of new legislation making SSA responsible for administering new programs.

Although it will be difficult, we believe the advantages to be gained are significant enough to justify the redesign.

SSA's operating environment dictates that serious consideration and study be given to developing direct access systems. SSA should decide to adopt direct access processing only after studying all relevant factors, including cost, file size, response time, file integration, and security requirements.

We do not contend that direct access processing is the sole means of efficiently using third-generation equipment, but it is true that such equipment is designed for direct access processing and operates most efficiently in this mode. This and other considerations indicate that SSA should redesign its systems to take better advantage of third-generation equipment.

RECOMMENDATIONS

To facilitate systems redesign, we recommend that SSA:

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

AGENCY ACTIONS

HEW generally agreed with our findings and concurred with our recommendations. HEW said that SSA is already implementing the recommendations and expects to take whatever further measures are indicated. (See app. I for HEW comments.)



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20201

DEC 13 1973

Mr. Franklin A. Curtis
Associate Director
Manpower and Welfare Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Curtis:

The Secretary has asked that I respond to your letter of November 1, 1973, in which you requested our comments on your draft report entitled "Increased Efficiency Predicted if Information Processing Systems at the Social Security Administration are Redesigned." Our comments are enclosed.

We appreciate the opportunity to comment upon your report before it is released in final form.

Sincerely yours,

A handwritten signature in cursive script that reads "John D. Young".

John D. Young
Assistant Secretary, Comptroller

Enclosure

APPENDIX I

COMMENTS ON GAO'S DRAFT REPORT ENTITLED "INCREASED EFFICIENCY PREDICTED IF INFORMATION PROCESSING SYSTEMS AT THE SOCIAL SECURITY ADMINISTRATION ARE REDESIGNED"

To help deal with the difficulties in redesigning data systems, the report recommends that SSA:

- establish long-range goals and objectives to guide the system designers in integrating functions performed by different offices and bureaus;
- establish an expert systems planning group charged with designing and developing a new information processing system which will take full advantage of the technological capabilities of modern computers and will not be caught up in responding to legislative changes; and
- direct the system designers to make an in-depth examination of alternative methods for storing, maintaining, and processing SSA data files and programs--methods that are operationally beneficial and technically feasible.

We concur in these recommendations. In fact, SSA is already heavily involved in implementing them.

Although we are in general agreement with the report as a whole, there are some parts or areas that we think need further explanation or clarification.

The report mentions the technological capabilities of modern computers and indicates or implies that unless a system employs direct access processing, it is not efficiently utilizing third generation technology. This is not necessarily so. A decision to employ direct access or serial processing depends on a number of factors--such as media storage costs, frequency of update, etc.--and these factors could point to serial processing as being more economical and efficient than direct access. As a matter of fact, this has frequently been the case at SSA. Although some SSA programs are processed in a direct access environment, the major files are serially processed because cost-effective mass storage media capable of handling these massive files are not yet available on the market. Several such devices are at the experimental level, and it is likely that a viable alternative to magnetic storage and its attendant serial processing will soon be available. SSA will continue to keep abreast of these, and other, developments and is prepared to modify its systems when these technological breakthroughs occur.

There are numerous important advantages related to third generation computer technology which SSA is effectively using that are not fully recognized in the report. Among these are "multiprogramming"--the concurrent processing of several programs in one computer, and "multiprocessing"--the

interconnecting of two or more computers. SSA has been involved with multiprogramming since shortly after the installation of its first large-scale, third generation computer. SSA has also made important strides with multiprocessor software in making it more compatible with the needs of large, business-type data processing installations.

We would also mention that SSA has made a considerable effort--which is not recognized in the report--to minimize the inefficiencies inherent in serial processing. For example, the statements on pages 16 and 17 to the effect that a serially processed tape file has to be read and rewritten in its entirety when even a single record is updated, do not take into account SSA's use of orbit files. Orbit files contain only that portion of the master file that has changed and, thus, drastically reduce the number of records rewritten each time the file is read.

In summary, while we believe that SSA has made good use of the benefits that advanced computer technology provides, we are very much aware of the need to find ways for further improving our data processing capability. To this end, we expect to vigorously pursue the implementation of GAO's recommendations and to take whatever further measures are indicated.

PRINCIPAL OFFICIALS OF THE
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
RESPONSIBLE FOR ADMINISTERING ACTIVITIES
DISCUSSED IN THIS REPORT

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>
SECRETARY OF HEALTH, EDUCATION, AND WELFARE:		
Caspar W. Weinberger	Feb. 1973	Present
Frank C. Carlucci (acting)	Jan. 1973	Feb. 1973
Elliot L. Richardson	June 1970	Jan. 1973
COMMISSIONER OF SOCIAL SECURITY:		
James B. Cardwell	Oct. 1973	Present
Arthur E. Hess (acting)	Mar. 1973	Oct. 1973
Robert M. Ball	Apr. 1962	Mar. 1973

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