SOCIAL SECURITY ADMINISTRATION

Year 2000 Readiness Efforts Helped Ensure Century Rollover and Leap Year Success
The Social Security Administration (SSA) relies extensively on information systems to support the processing of benefits and to provide various other services to the public. The agency maintains and operates over 300 mission-critical computer systems supported by over 35 million lines of in-house developed computer code and hundreds of commercial off-the-shelf vendor products. Because of its heavy reliance on computers, the Year 2000 problem presented SSA with the enormous challenge of reviewing all of its computer software and making the conversions required to ensure that its systems could handle the first change to a new century since the computer age began.

Since 1997, we have conducted various reviews and issued five reports and testimony statements on SSA's efforts to ensure its readiness for the year 2000. Our first report, in October 1997, noted SSA's early initiatives to address the challenge, identified critical risks that threatened the success

1The Old Age Survivors Insurance and Disability Insurance programs, together commonly known as Social Security, provide benefits to retired and disabled workers and their dependents and survivors. The Supplemental Security Income program provides income for aged, blind, or disabled individuals with limited income and resources. SSA also issues Social Security numbers to eligible individuals and maintains and provides earnings records for individuals working under employment covered by the program.

of these efforts, and recommended actions for mitigating the risks. Our most recent testimony in July 1999 updated the agency’s progress in implementing our recommendations and in taking other critical steps to ensure Year 2000 (Y2K) compliance. At your request, this report summarizes our review of SSA’s final actions to ensure its Year 2000 readiness, including the actions it took during the rollover period—December 30, 1999, through January 3, 2000, as well as for the February 29 leap year date—to ensure a successful transition to the new century.

Results in Brief

Overall, SSA demonstrated a strong and consistent commitment to addressing identified concerns about its Year 2000 program. The agency completed all of the critical tasks involved in ensuring its readiness prior to the change of century and experienced only minor problems during the rollover weekend. For those problems that did occur, SSA now reports that all have been mitigated by correcting the systems involved. Moreover, according to SSA, none of the problems encountered during the rollover weekend adversely affected its ability to serve the public. SSA further reported that its systems processed data without incident during the February 29 leap year date, another potential date for disruptions.

Like other organizations, SSA must still consider the possibility that additional challenges associated with the year 2000 could occur. There may continue to be minor problems along the way as organizations process data and transactions in the future, such as during quarterly, end-of-year, or other critical periods. While SSA’s success so far is a very positive indicator that any potential hurdles will also be overcome, the agency nonetheless must continue its diligence in anticipating and responding to any problems that occur. Further, it will be especially important for SSA to consider how practices that it applied in addressing the Year 2000 problem can now be used to help ensure the effective management of its broader information technology program. SSA agreed that such action should be taken, and the Commissioner stated that the agency had already begun to apply lessons learned from its Y2K experiences.

Background

Federal agencies faced the potential for critical computer system failures at the turn of the century due to incorrect information processing relating to dates. This problem was rooted in how dates were recorded and processed in computer systems. Specifically, for the past several decades, systems typically used two digits to represent the year—such as “97” for 1997; in
such a format, however, 2000 is indistinguishable from 1900. Hence, a beneficiary born in 1925 and therefore turning 75 in 2000 could be seen as being negative 25 years old (if “now” is 1900)—not even born yet—and therefore ineligible for benefits that the individual had already been receiving.

Correcting this problem was an enormous challenge for all agencies, since many of the government's computer systems were developed 20 to 25 years ago, used a wide array of computer languages, and lacked full documentation. Complete and thorough Year 2000 testing was essential to providing reasonable assurance that new or modified systems could process dates correctly and would not jeopardize an organization's ability to perform core business operations in the new millennium. This included testing systems and operations at the century rollover and during the February 29, 2000, leap year date.

As we previously reported, SSA first recognized the potential impact of the Year 2000 problem in 1989, and therefore was able to launch an early response to this challenge. It initiated early awareness activities and made significant early progress in assessing and renovating mission-critical mainframe systems that enable it to provide Social Security benefits and other public assistance. Moreover, the agency continued to make excellent progress on the Year 2000 problem throughout the decade. Because of the knowledge and experience gained through its efforts, SSA was consistently recognized as a federal leader in addressing the Year 2000 issue.

Like many other organizations, SSA faced a number of challenges to ensuring its readiness. Our 1997 report identified three key risk areas in the agency's Year 2000 program: (1) compliance of mission-critical systems used by the 54 state Disability Determination Services (DDS) that help SSA administer its disability programs, (2) compliance of SSA's data exchanges with outside sources, such as other federal agencies, state agencies, and private businesses, and (3) SSA's lack of contingency plans to ensure business continuity in the event of systems failures. As a result of these risks, we recommended several actions for improving SSA's Year 2000 vulnerability in these areas. SSA agreed with all of our recommendations, and took a number of important actions to implement them.

3GAO/AIMD-98-6, October 22, 1997.
Our July 1999 testimony noted SSA's progress in implementing our recommendations and identified other vital steps that the agency had taken to help ensure its preparedness for the year 2000. For example, SSA established a Y2K test facility for its operating systems, vendor products, and mission-critical systems. In addition, to ensure the delivery of benefits payments, SSA worked jointly with the Department of the Treasury's Financial Management Service and the Federal Reserve System to test the transfer of electronic benefits payments from Treasury to the Federal Reserve through the Automated Clearinghouse network. SSA also coordinated with the U.S. Postal Service to help ensure the delivery of benefits checks.

While SSA had made significant progress on its Year 2000 efforts, our testimony, nonetheless, emphasized the need for SSA to finalize certain tasks integral to ensuring its overall readiness for the year 2000. For example, although SSA had developed contingency plans to support its core business operations, it still needed to finalize testing of those plans and implement its Day One strategy, consisting of actions to be executed during the last days of 1999 and the first few days of 2000.

Objective, Scope, and Methodology

The objective of our review was to assess SSA's efforts to finalize critical tasks required to ensure its Year 2000 readiness, including the actions that it took during the century rollover period and the February 29 leap year date to address Year 2000-induced disruptions. To meet this objective, we reviewed and analyzed key Year 2000 compliance documents, including quality assurance status reports and monthly and quarterly progress reports submitted to Congress and the Office of Management and Budget (OMB). We also reviewed SSA's contingency planning documents, including its Day One strategy. Further, as part of observing the rollover, we inspected SSA's Year 2000 command center capabilities and reviewed SSA's Year 2000 incident reports. We used our Year 2000 guides in evaluating SSA's readiness activities.4

We discussed SSA's Year 2000 program activities with officials in various headquarters offices, including the offices of the deputy commissioners for systems; operations; and finance, assessment, and management. We also met with management and staff at SSA's program service center in Birmingham, Alabama, and at its field office in Tucker, Georgia. In addition, we interviewed Year 2000 program officials at the state DDS office in Decatur, Georgia. We discussed the nature and extent of rollover and leap year disruptions with SSA's Year 2000 program director and other appropriate personnel.

We conducted our review from August 1999 through March 2000, in accordance with generally accepted government auditing standards. The Commissioner of Social Security provided comments on a draft of this report. These comments are discussed in the “Agency Comments” section and are reprinted in appendix I.

SSA Completed Critical Tasks to Ensure Year 2000 Readiness

Following our July 1999 testimony, SSA took a number of important steps to ensure that its Year 2000 tasks were successfully completed prior to the century rollover. We had noted that while SSA was making excellent progress on the Year 2000 problem, it had not completed certain tasks that were critical to ensuring its overall readiness. These tasks included (1) conducting specific actions required to finalize its Year 2000 business continuity and contingency plans and (2) correcting date-field errors identified through a quality assurance process that the agency implemented to reduce Year 2000 risks.

SSA Completed Year 2000 Business Continuity and Contingency Plans

Among SSA's most important responsibilities in the months leading up to the new century was completing certain tasks required to ensure the effectiveness of its Year 2000 business continuity and contingency plans, and coordinating with its own staff and business partners to ensure the timely functioning of its core business operations. This included coordinating with its benefits delivery partners on contingency actions for ensuring timely benefits payments, and completing various tests of the plans to ensure their viability and usefulness in the event of a systems failure.

To ensure that Social Security and other benefits would continue to be paid at the turn of the century, SSA assisted Treasury in establishing a number of payment-related contingencies. These included developing alternative disbursement processes for financial institutions that experience Y2K
disruptions and arranging to provide third-party emergency payments to beneficiaries. In addition, SSA worked with the U.S. Postal Service to ensure that paper checks would be delivered on time.

SSA also conducted extensive testing of its business continuity and contingency plans to evaluate whether individual contingency plans were capable of providing the level of support needed to the agency's core business processes and whether the plans could be implemented within a specified period. To accomplish this, SSA rehearsed its contingency plans at selected field offices. These tests involved, for example, using paper forms, rather than computers, to process Social Security and Supplemental Security Income workloads. SSA relied on the test results to determine what resources were required to carry out specific contingency tasks and to familiarize staff with the required tasks prior to the rollover weekend. SSA completed testing its business continuity and contingency plans by September 30, 1999.

A critical feature of SSA's contingency planning was the development and implementation of a Day One strategy to guide its rollover activities. SSA included this strategy in its overall business continuity and contingency plan to ensure, to the extent possible, that its facilities and systems would be fully operational on January 3, 2000—the first business day of the new century. The strategy comprised the comprehensive set of actions that were to be executed during the last days of 1999 and the first days of 2000 and the activities leading up to the critical century rollover date, such as the identification of key personnel involved, preparation of facilities checklists, establishment of a Year 2000 command center, and the identification of computer systems to be tested.

To ensure that its Day One strategy would be effective, in September 1999, SSA conducted simulations of potential infrastructure problems that could affect its operations (for example, telephone, electric power, and water outages; security system failures; and the lack of mainframe computer connectivity). Designated personnel in selected SSA offices used the Day One strategy as a guide for mitigating the problems encountered during the simulations. Lessons learned from the simulations became the basis for revising the Day One strategy and for better informing SSA's personnel of the critical activities that could be involved in ensuring continued operations during the rollover and beyond.
SSA Corrected Date-Field Errors Identified Through Its Quality Assurance Process

Our July 1999 testimony noted that SSA had instituted a change management process to help reduce the risk of Year 2000 disruptions. One of the key components of the change management process was the use of a quality assurance validation tool that allowed SSA to assess the quality of its previously renovated mission-critical applications. Specifically, this tool searched application programs to identify any date defects that were introduced into systems after they were already certified Year 2000 compliant. SSA then corrected and recertified the applications before returning them to production.

SSA applied the validation tool to all compatible (284 of its 308) mission-critical applications. At the time of our testimony, SSA had assessed about 92 percent of those applications and had identified more than 1,500 date-field errors. However, only about 44 applications had actually been corrected, recertified, and returned to production. SSA subsequently made the necessary corrections to these applications, and in December 1999 recertified all of its compatible applications as having no errors.

SSA Readiness Actions Helped Ensure General Rollover Success

SSA encountered few Year 2000-related errors in its transition to the new century, reporting that the Year 2000 problem had no effect on its business operations or the delivery of its key services. SSA’s early awareness of the Year 2000 problem and its prompt attention to addressing identified Year 2000 risks helped position it to successfully meet this challenge. SSA enhanced its readiness by using the rollover weekend to identify and, where necessary, correct errors before any problems could result in operational consequences.

In guidance on planning for the rollover period, we stated that organizations should activate coordination/command center(s), conduct facility inspections, and perform postrollover tests, evaluations, and

5 The two other components of this change management process were (1) system recertifications and (2) a moratorium on discretionary software modifications between September 1, 1999, and March 31, 2000.

6 According to SSA, 10 of the 308 applications were not tested because they were incompatible with the tool; 13 applications were not tested because they are no longer in use (for example, obsolete, retired, or replaced); and one because it is no longer a part of SSA’s inventory.

7 GAO/AIMD-10.1.22, October 1999.
assessments of key business processes and supporting systems. Consistent with this guidance, SSA established several centralized centers of activity to operate during the rollover weekend. Foremost was the agency's Year 2000 Command Center, located in its National Computer Center in Baltimore, Maryland. The command center served as the focal point for monitoring all of the agency's Day One activities and for providing direct access to the most current updates on SSA's Year 2000 status. The center was staffed with key representatives from various offices throughout SSA. These included the office of the deputy commissioner for systems, as well as the offices of the deputy commissioners for operations; finance, assessment and management; disability and income security programs; communications; and legislative and congressional affairs.

SSA's rollover activities began on December 30, 1999, and continued through January 3, 2000. During this period, designated personnel throughout the agency were tasked with inspecting, evaluating, and reporting on virtually every one of SSA's offices. This included assessing infrastructure elements such as electric power, telephones, and elevators, and monitoring the agency's local area network operations and the status of on-line and batch production workloads. Coordination and reporting on the overall health of the agency's equipment and software were facilitated by the use of various existing tools, including the Internet, Intranet, telephones, and public television. SSA communicated (via a dedicated terminal) with the federal Information Coordination Center in Washington, D.C., on the status of operations during the rollover period.8

Overall, SSA identified three problems related to Y2K, but its Year 2000 project team considered each to be minor, and reported that SSA was able to correct them with no impact on the agency's processing capabilities.9 Two of the three problems involved electronic mail. In one incident, electronic messages generated during the rollover weekend were erroneously dated 1900. In the second incident, some electronic messages with return receipt requests contained a subject line that displayed an

8The President created the Information Coordination Center in June 1999 to assist the Chair of the President's Council on Year 2000 Conversion. Under its umbrella, the federal government implemented a large-scale reporting process to obtain information on events occurring during the rollover weekend from major federal agencies, states, key sectors of the economy, and foreign countries.

9Because the identified problems did not have a significant impact on operations, SSA did not report them to the Information Coordination Center.
incorrect century, SSA stated that neither problem adversely affected actual e-mail traffic. Further, SSA reported, it corrected the first problem on January 3, 2000, and the second by January 21, 2000, using a vendor software patch.

In a third incident, SSA encountered a problem in which the year was not fully displayed on reports produced in the field offices to alert claims examiners to outstanding actions. Specifically, the display date did not show the complete year due to the suppression of one of the zeros contained in the year 2000. As with the previous two problems, SSA did not consider this incident to be significant, and reported it corrected on January 15, 2000, as part of its normal monthly software maintenance activities.

SSA Did Not Encounter Leap Year Difficulties

Another key Year 2000-related date that threatened to affect SSA was leap day—February 29, 2000. A failure to ensure that computer systems could recognize this date raised the potential that applications would process data incorrectly by, for example, miscalculating the number of days between significant dates or in a significant time frame (for example, week, month, quarter, or year). SSA had anticipated the potential impact of this date and had included it among the agency's critical processing dates that were tested for Year 2000 compliance. In reporting on the status of its leap day operations, SSA stated that the agency did not encounter any problems or limitations in its processing capabilities as a result of this date.

Year 2000 Practices Could Help Improve SSA's Management of Information Technology

For many federal agencies, the threat posed by the Year 2000 problem was a much needed alert. Because of the urgency of the issue, agencies could not afford to carry on in the same manner that had resulted in over a decade of poor information technology planning and program management. As we reported in October 1999, the Year 2000 problem laid a foundation for longer term improvements in the way the federal government views, manages, and protects computer systems supporting the nation's critical infrastructure. Accordingly, it is important that agencies institutionalize the processes that they established to contend with the Year 2000 problem so that future information technology

10Critical Infrastructure Protection: Comprehensive Strategy Can Draw on Year 2000 Experiences (GAO/AIMD-00-1, October 1, 1999).
initiatives benefit from this massive effort. Lessons learned from the Year 2000 challenge should be applied to agencies’ implementation of the Clinger-Cohen Act of 1996 which, in part, seeks to strengthen executive leadership in information management and institute sound capital investment decision-making to maximize the return on information systems investments. As we recently testified, among the lessons learned governmentwide were the importance of

- providing high-level congressional and executive branch leadership,
- understanding the importance of computer-supported operations,
- providing standard guidance,
- establishing partnerships,
- facilitating progress and monitoring performance, and
- implementing fundamental information technology improvements.

As part of its Year 2000 program, SSA implemented a number of practices that hold valuable lessons about how information technology can best be managed. It will be essential for SSA to consider how these practices can be used to help ensure effective management of its information technology over the longer term. For example, as a leader among federal agencies in addressing the Year 2000 problem, SSA played a pivotal role in energizing other federal agencies to meet the challenge. SSAs assistant deputy commissioner for systems chaired the Chief Information Officers Council’s Committee on the Year 2000, and in this capacity, helped raise awareness about the Y2K threat across government and provide valuable assistance to other federal agencies in addressing the problem. For example, SSA was instrumental in supporting federal agencies’ development of Day One strategies, which were necessary to reduce the risk to facilities, systems, programs, and services during the critical rollover period. In testifying on the Year 2000 problem in January 1999, we noted that SSA had developed such a strategy and encouraged OMB to consider requiring other agencies to develop similar strategies. OMB agreed, subsequently requiring agencies to submit Day One strategies by October 15, 1999. SSAs strategy became the model that many other federal agencies and private-sector organizations used in developing their own Day One blueprints.


As SSA proceeds with its operations in the new century, it now has the opportunity to build upon its position as a proactive Year 2000 leader, facilitating more effective management of information technology. Specifically, in undertaking its own information technology planning and program management, and because of the broad range of technology-related information and perspectives gained from addressing the Year 2000 problem, SSA should be better positioned to explore how technology can improve agency performance. Further, because the Year 2000 problem demanded consistent and persistent top management attention, SSA's leadership should now have a more established basis for identifying, prioritizing, and evaluating the effectiveness of information technology to best meet the agency's needs.

The Year 2000 problem also compelled SSA to closely examine its relationships with business partners critical to the delivery of its services, especially those involving the payment of benefits. As mentioned, SSA worked closely with its benefits payment delivery partners—the Department of the Treasury, the Federal Reserve System, and the U.S. Postal Service—to ensure the continuity of operations supporting Social Security and Supplemental Security Income benefits payments. SSA's development of a benefits payment and delivery plan that provided alternate ways of delivering payments to Social Security beneficiaries in the event of a Year 2000-related problem was an example of how the agency effectively partnered with Treasury and the Federal Reserve to meet this challenge.

As organizations increasingly look to electronic communications and commerce as a means of conducting business, the need for partnerships among federal agencies and other entities is likely to grow in importance. Electronic interdependencies, and the potentially massive exchanges of data that are likely to accompany them, prompt an increasing need for federal agencies and private entities to form partnerships to deal with crosscutting issues, such as Internet service delivery and computer security. As a result of its Year 2000 work, SSA should now have an improved basis for establishing and building upon its partnerships with other organizations to meet this challenge.

The Year 2000 problem resulted in many agencies' taking charge of their information technology resources in much more active ways than they did in the past, and provided them with the incentive and opportunity to assume control of their information technology environments. SSA accomplished this in part by implementing its Year 2000 quality assurance
validation tool to help reduce the risk of disruption. As part of an established series of change management procedures, the tool enabled SSA to reexamine all of its previously renovated mission-critical applications to make sure that date defects were not introduced into systems that were already certified Year 2000-compliant. Beyond the Year 2000 rollover, the tool remains useful for reducing the risk of date problems associated with SSA's future software application modifications. SSA has recognized this potential benefit and has begun pilot testing the tool on current software projects to determine the best approach for institutionalizing the quality assurance mechanism within its software development and maintenance process.

SSA's development of its Year 2000 business continuity and contingency plans should also help in the future. In the event that an emergency occurs that negatively affects the agency's ability to perform services electronically, the plan contains numerous tested procedures that could help facilitate SSA's continued operations.

At the conclusion of our review, the Year 2000 program director stated that, beyond considering broader implementation of the quality assurance tool, SSA had not yet undertaken nor established a plan for conducting a postevaluation study of its Year 2000 practices. However, he acknowledged the potential value in assessing how these practices can be applied to help SSA effectively manage its information technology. He added that he intended to suggest to SSA management that such an evaluation be undertaken.

Conclusions

Because of SSA's commitment to and leadership in addressing the Year 2000 problem, it was well-positioned to enter the new century, encountering few difficulties during the rollover. Now that the new century has arrived, it is important that SSA maintain this momentum. Institutionalizing the practices established to contend with the Year 2000 problem, such as use of the quality assurance validation tool, could assist SSA in more effectively managing its information technology.

Recommendations

To help ensure the effective management of information technology, we recommend that the Commissioner of Social Security direct the Chief Information Officer, in conjunction with the Deputy Commissioner for
Systems, to capitalize on the lessons learned from SSA's Year 2000 initiative by

- establishing and implementing a plan and cognizant milestones for identifying which of its processes and practices can be applied to the agency's existing approach toward managing information technology and
- institutionalizing those processes and practices as part of the agency's implementation of the Clinger-Cohen Act, where appropriate.

Agency Comments

In commenting on a draft of this report, SSA agreed with our recommendations and stated that the agency had already begun to apply lessons learned from its Year 2000 efforts. For example, SSA stated that its Year 2000 contingency plans have been incorporated into the agency's Continuity of Operations Plans. In addition, SSA reiterated that it has begun to pilot test the quality assurance validation tool used for its Year 2000 program to determine whether it can help effectively manage the agency's information technology. SSA also stated that it plans to consider applying the lessons learned from its Year 2000 initiative in its implementation of the Clinger-Cohen Act.

We are sending copies of this letter to the Honorable Kenneth S. Apfel, Commissioner of Social Security; the Honorable Jacob J. Lew, Director of the Office of Management and Budget; appropriate congressional committees; and other interested parties. Copies will also be made available to others upon request.
Please contact me at (202) 512-6253 or by e-mail at willemssenj.aimd@gao.gov if you have any questions concerning this report. Key contributors to this assignment were Michael A. Alexander, Kenneth A. Johnson, and Valerie C. Melvin.

Joel C. Willemssen  
Director, Civil Agencies Information Systems
Appendix I

Comments From the Social Security Administration

March 30, 2000

Mr. Jeffrey C. Steinhoff
Acting Assistant Comptroller General
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Steinhoff:

Thank you for the opportunity to review and comment on the General Accounting Office draft report Social Security Administration: Year 2000 Readiness Efforts Helped Ensure Century Rollover and Leap Year Success (GAO/AIMD-00-125). We appreciate the recognition in the draft report of the strong commitment of the Social Security Administration (SSA) to meet the Year 2000 challenge. Because of this commitment, the Year 2000 rollover period was uneventful for us and there was no disruption in service to the public.

With regard to the recommendations included in the draft report, we agree that the lessons learned from our successful Year 2000 effort should be applied, where applicable, to other initiatives. In fact, we have already begun to do so. We found the contingency plans that were developed as part of the Year 2000 initiative to be of particular value. They already have been incorporated into our Continuity of Operations Plans. In addition, we have begun to pilot test the quality assurance validation tool used in our Year 2000 effort to see if it can assist us to more effectively manage our overall information technology initiatives. As for applying the lessons learned from our Year 2000 initiative to implementation of the Clinger-Cohen Act, we certainly will consider this experience as we continue to conform with the requirements of the Act.

If you have any questions, your staff may contact Mark Welch, on (410) 965-0374.

Sincerely,

Kenneth S. Apfel
Commissioner of Social Security

SOCIAL SECURITY ADMINISTRATION
BALTIMORE MD 21235-0001

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