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YEAR 2000 COMPUTING CRISIS

Status of Efforts to Deal With Personnel Issues

GAO

United States
General Accounting Office
Washington, D.C. 20548

Accounting and Information
Management Division

B-280543

October 22, 1998

The Honorable James J. Leach
Chairman
Committee on Banking and Financial Services
House of Representatives

Dear Mr. Chairman:

With close to half the world's total computer capacity and 60 percent of its Internet assets, the United States is the most advanced and most dependent user of information technology.[1] Should these information systems—which perform functions and services critical to our nation—suffer disruption, a widespread crisis could result. Accordingly, the upcoming change of century is a sweeping and urgent challenge for public- and private-sector organizations. Correcting this problem will be labor-intensive and time-consuming—and must be done while systems continue to operate. However, many departments and agencies[2] are expressing concern that the critical information technology personnel needed to correct the Year 2000 problem are not available.

Given the criticality of the Year 2000 problem and the importance of having adequate resources to solve the problem, you asked us to assist in assessing workforce issues associated with the Year 2000. Our objectives were to (1) determine the nature and extent of Year 2000 personnel issues being reported by federal agencies and (2) identify what is being done by the government to address reported federal personnel shortages related to the Year 2000 problem. Appendix I contains our scope and methodology.

Results in Brief

About half of the 24 large agencies and a quarter of the 41 small agencies and independent entities reporting to the Office of Management and Budget (OMB) expressed concerns that the personnel needed to resolve the Year 2000 problem would not be available. Generally, these concerns fall into the categories of difficulty in finding and keeping qualified government personnel, and difficulty in obtaining contractors. While a significant number of agencies are raising these concerns, their comments are largely anecdotal and a comprehensive analytical assessment of the

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[1]*Critical Foundations: Protecting America's Infrastructures* (President's Commission on Critical Infrastructure Protection, October 1997).

[2]Departments and agencies will be referred to collectively as agencies throughout this letter.

issue has not yet been made. As a result, the full extent and severity of the Year 2000 workforce issue across the government is not known.

The President's Council on Year 2000 Conversion, the Chief Information Officers (CIO) Council, and the Office of Personnel Management (OPM) have various initiatives underway to address reported Year 2000 personnel issues. For example, OPM has recently developed additional human resources management aids, such as waivers allowing agencies to rehire federal retirees without the usual offsets, to assist agencies in dealing with Year 2000 workforce issues.

While such initiatives have provided agencies with important options to help address reported Year 2000 personnel problems, it is not yet clear that recent actions have enabled agencies to successfully resolve all perceived personnel issues. Accordingly, it is essential that OMB, as part of its monitoring responsibilities for the government's Year 2000 program, continue to solicit from agencies whether they have any remaining Year 2000 personnel problems and to help provide specific assistance to individual agencies. Moreover, OMB should work with the CIO Council to expedite evaluations of the full extent and scope of information technology personnel issues to help formulate effective solutions.

Background

On January 1, 2000, computer systems worldwide could malfunction or produce inaccurate information simply because the century has changed. Unless corrected, such failures could have a costly, widespread impact. The problem is rooted in how dates are recorded and computed. For the past several decades, systems have typically used two digits to represent the year—such as "97" for 1997—to save electronic storage space and reduce operating costs. In such a format, however, 2000 is indistinguishable from 1900. Software and systems experts nationwide are concerned that this ambiguity could cause systems to malfunction in unforeseen ways, or to fail completely.

As we reported to you and testified to Congress earlier this year, the public faces a risk that critical services could be severely disrupted by the Year 2000 computing crisis.[3] Financial transactions could be delayed, airline flights grounded, and national defense affected. Also, the many

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[3]Year 2000 Computing Crisis: Strong Leadership and Effective Public/Private Cooperation Needed to Avoid Major Disruptions (GAO/T-AIMD-98-101, March 18, 1998); Year 2000 Computing Crisis: Strong Leadership Needed to Avoid Disruption of Essential Services (GAO/T-AIMD-98-117, March 24, 1998); and Year 2000 Computing Crisis: Potential for Widespread Disruption Calls for Strong Leadership and Partnerships (GAO/AIMD-98-85, April 30, 1998).

interdependencies that exist among governments and within key economic sectors could cause the failure of a single system to have adverse repercussions across the nation and internationally. While managers in the government and the private sector are taking many actions to mitigate these risks, a significant amount of work remains, and time frames are unrelenting.

One key concern in addressing the Year 2000 problem is the availability of trained information technology personnel. We reported in April 1998, that while various agencies stated that they or their contractors had problems in obtaining or retaining information technology personnel, no governmentwide strategy existed to address recruiting and retaining the personnel with the appropriate skills for Year 2000-related work.[4] We recommended that the Chairman of the President's Council on Year 2000 Conversion develop a personnel strategy which includes (1) determining the need for various information specialists, (2) identifying any administrative or statutory changes that would be required to waive reemployment penalties for former federal employees, and (3) identifying ways to retain key Year 2000 staff in agencies through the turn of the century.[5] We reemphasized the need for such a strategy in a June 1998 testimony.[6]

Within the executive branch, several executive councils and agencies are responsible for the human resources aspect of the Year 2000 effort. These councils and agencies, and their respective Year 2000 responsibilities are described below:

- The President's Council on Year 2000 Conversion is chaired by an Assistant to the President and is comprised of one representative from each of the executive departments and from other federal agencies as determined by the chair. The chair of the Conversion Council is tasked with the following Year 2000 roles: (1) overseeing federal agencies' Year 2000 activities, (2) acting as chief spokesperson in national and international forums, (3) providing policy coordination of executive branch activities with state, local, and tribal governments, and

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[4]GAO/AIMD-98-85, April 30, 1998.

[5]Shortly after a draft of our report was given to the Chairman for comment, OPM issued a memorandum stating that the Year 2000 was an "unusual circumstance" which would allow OPM to grant agencies waivers, allowing them to rehire former federal personnel to work on Year 2000 conversion efforts temporarily without a reduction in the employee's salary or annuity.

[6]Year 2000 Computing Crisis: Actions Must Be Taken Now to Address Slow Pace of Federal Progress (GAO-T-AIMD-98-205, June 10, 1998).

(4) promoting appropriate federal roles with respect to private sector activities.

To date, the Conversion Council has established several working groups to address Year 2000 concerns. One of these is the Workforce Issues working group, which began meeting in May 1998. The working group is chaired by the Deputy Secretary of the Department of Labor, and includes officials from the Departments of Labor, Education, Housing and Urban Development, Commerce, Defense, as well as OPM and the Small Business Administration. The group's main objective is to determine what the federal government can do to help meet the country's needs for technically skilled personnel to address the Year 2000 problem, with special attention to small businesses, local governments, and organizations in rural areas.

- The CIO Council is comprised of CIOs and Deputy CIOs from 30 federal departments and agencies, representatives from OMB, and the chairs of the Government Information Technology Services Board and Information Technology Resources Board. It is the principal interagency forum for improving the design, modernization, use, sharing, and performance of information technology resources. The Council's role includes: (1) developing recommendations for information technology management policy, procedures, and standards, (2) identifying opportunities to share information resources, and (3) assessing and addressing the needs of the federal government for an information technology workforce. One of the committees reporting to the CIO Council, the Education and Training Committee, is charged with addressing issues in hiring, training, and maintaining an effective federal information technology workforce.
- OMB is responsible for overseeing federal agencies' responses to the Year 2000 problem. In early 1997, OMB issued a broad Year 2000 strategy for the federal government and required that 24 major agencies submit quarterly reports on their Year 2000 progress.[7] On January 20, 1998, OMB added new quarterly reporting requirements, specifically asking agencies to provide a narrative description of progress, including a description of any problems affecting progress and, in particular, any problems in acquiring or retaining skilled personnel. In March and April 1998, OMB requested that an additional 31 small agencies report their progress to OMB by April 30, 1998, and another 10 small agencies and other entities, such as the Tennessee Valley Authority and the United States Postal Service, report by May 15, 1998. Most recently, in July 1998, OMB revised its earlier reporting requirements and asked that nine small and independent agencies begin

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[7]Although 25 major agencies report to OMB, we are only reporting on 24. The Central Intelligence Agency's reports are classified, and so are not included in this summary.

providing quarterly reports on progress in addressing difficulties relating to the Year 2000 problem.

- OPM, the federal government's human resources agency, provides federal agencies with personnel services and policy leadership including staffing tools, guidance on labor-management relations, preparation of government's future leaders, compensation policy development, and programs to improve workforce performance. OPM is responsible for helping agencies to equip themselves with the systems they need to manage their human resources effectively, and in light of the Year 2000 problem, is providing tools that agencies may use to help recruit and retain information technology professionals.

Concerns Exist About the Availability of Information Technology Personnel

Of the 24 large agencies reporting to OMB, 13 are expressing concerns about the availability of information technology personnel.[8] Also, 10 of the 41 small agencies and independent entities expressed these concerns.[9] These organizations' concerns generally fall into the categories of difficulty in recruiting and retaining internal staff and in obtaining contractor support. Appendix II identifies the organizations reporting workforce issues and summarizes them. It also identifies the organizations with no reported concerns.

Agencies Reporting Difficulty in Finding and Keeping Needed Personnel

Both large and small agencies and entities reported that retaining key information technology staff and recruiting new staff were among their greatest concerns in addressing the Year 2000 problem. Agencies indicated that they had lost skilled information technology employees through retirements and through increased recruitment by the private sector. For example, in May 1998, the Department of Agriculture reported that several of its agencies expressed particular concern that the loss of staff would affect their ability to meet Year 2000 deadlines. Specifically, the Farm Services Agency reported that it lost 28 (7 percent) of its 403 information technology staff in the first 6 months of fiscal year 1998.

Agencies have also reported that recruiting replacements for information technology personnel is difficult. The Department of Veterans Affairs noted that recruiting is very competitive for Year 2000 professionals in

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[8]Four of these agencies, the Department of Agriculture, the Department of Commerce, the Department of Labor, and the Department of the Treasury did not state these concerns in their August reports to OMB, but told us of them in subsequent discussions.

[9]Three of these entities, the Farm Credit Administration, the Federal Deposit Insurance Corporation, and the Neighborhood Reinvestment Corporation did not state these concerns in their reports to OMB, but told us of them in subsequent discussions.

some geographic areas, and stated the concern that with lucrative finders fees being advertised, government employees may leave for the private sector. Also, the National Credit Union Administration reported that it had experienced difficulties in hiring senior Year 2000 program officials.

Among the various types of information technology workers needed, computer programmers are reported to be in the shortest supply. For example, in February 1998, the Justice Department reported that it had difficulty hiring and retaining skilled COBOL[10] programmers. In August, the Department reported that it continues to encounter these problems. As another example, in its February, May, and August reports, the Environmental Protection Agency stated that it experienced problems finding PL/I[11] programmers.

Agencies Reporting Difficulty in Obtaining Contractor Support

Recruiting and retaining qualified contract personnel is another issue frequently mentioned by agencies reporting staffing problems. Once again, the specific type of information technology worker most often mentioned as being in short supply is programmers. For example, the Department of Justice reported in February, May, and again in August that it is continuing to encounter problems in obtaining contractor support with the necessary programming skills.

Agencies' concerns also include the high turnover rate of contractor staff and the time it takes to recruit contractor staff. For example, the State Department indicated in May 1998 that the recruitment cycle for replacing contract systems programmers took more time than in past years despite the use of professional recruitment services by the contract vendors.

Also, several agencies noted problems with increasing contract labor wage rates. These agencies reported that they are having to increase the hourly rate they pay for contractor staff because contractors are increasing their own staff salaries. For example, the Department of Agriculture indicated that its agencies are experiencing contracting delays as vendors find it increasingly difficult to bring on more contract employees without substantial increases in contract dollars. In addition, the Federal Deposit Insurance Corporation reported that some of its contractors are losing personnel to higher salaries with other contractors. When replacing these personnel, the contractors are increasing their hourly rates.

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[10]COBOL (Common Business Oriented Language) is a common programming language for business applications that was introduced in the 1960s.

[11]PL/I (Programming Language 1) is a programming language that was introduced in the 1960s.

Four agencies reported delays on six system development efforts because of problems they had encountered in obtaining contractors to address the Year 2000 problem. For example, the State Department reported that the loss of key contractor personnel had delayed the completion of one of its mission critical systems, the Management, Policy and Planning Information System, by 3 months. The Department of Commerce also reported that its Patent and Trademark Office experienced a 3-month delay on one of its mission-critical system development efforts, the Classified Search and Image Retrieval system, when the contractor was unable to place qualified staff on the task. The task order was terminated with that contractor, a new task order was awarded to another contractor, and work is now proceeding.

Full Extent and Severity of Year 2000 Workforce Issue Is Unclear

Although a significant number of agencies are reporting concerns with the availability of qualified Year 2000 staff, it is not possible to determine the full extent or severity of personnel shortages from these concerns because they are often anecdotal. For example, one department notes that one of its agencies "has had difficulty" hiring a particular type of programmer, while another reports that it is encountering "some problems" hiring personnel. Also, only six mission critical systems were reported to have "experienced delays" in reaching Year 2000 compliance because of personnel issues. Without more detailed information on the nature and extent of personnel issues, it is difficult to determine how to best address it.

Executive Councils and OPM Have Begun to Respond to Reported Year 2000 Personnel Issues

OPM, the Conversion Council, and the CIO Council have various initiatives underway to address Year 2000 personnel issues: OPM has provided tools to assist agencies in dealing with Year 2000 workforce issues; the Conversion Council is identifying solutions to personnel shortages in both the government and the private sector; and the CIO Council has initiated a broad study of information technology workforce issues in the government and private sector.

OPM Provides Aids to Agencies to Help in Obtaining Needed Personnel

Agencies currently have a number of aids they can use to help recruit and retain needed personnel. Some have been available for years. Others are new. These aids are summarized below:

Recruitment and relocation bonuses: Federal agencies have the authority to make a lump-sum payment of up to 25 percent of basic pay to a newly appointed employee, or to an employee who must relocate in cases in

which the agency determines that the position would otherwise be difficult to fill. In return for this lump-sum payment, the employee must sign a service agreement with the agency to complete a specified period of employment.

Superior qualifications appointments: Agencies have the authority to set pay for new appointments or reappointments of individuals to General Schedule (GS) positions above step 1 of the grade[12] on the basis of the candidate's superior qualifications or the agency's special need.

Pay at highest previous rate: Upon reemployment, transfer, reassignment, promotion, or change in type of appointment, agencies can set an employee's basic pay by taking into account the employee's previous pay rate while employed in another civilian federal position (with certain exceptions).

Temporary and term appointments: Agencies can use temporary appointments in the competitive service for positions not expected to last longer than 1 year, but which can be extended for 1 additional year. Agencies can use term appointments when positions are expected to last longer than 1 year but not more than 4 years.

Retention allowances for individual employees: Agencies have the authority to make continuing payments of up to 25 percent of basic pay if the agency determines that (1) the unusually high or unique qualifications of the employee or the agency's special need for the employee's services makes it essential to retain the employee and (2) the employee would be likely to leave federal service in the absence of a retention allowance. Retention allowances must be paid in accordance with the agency's previously established retention allowance plan and must be reviewed and certified annually.

Performance and incentive awards: Agencies can provide employees a lump-sum cash award on the basis of a fully successful or better rating of record or in recognition of accomplishments that contribute to the improvement of government operations. Awards based on the rating of record can be up to 10 percent of salary, or up to 20 percent for exceptional performance, provided the award does not exceed $10,000 per employee. With OPM review and approval, agencies can grant awards over

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[12]In the federal government, grades represent levels of difficulty, responsibility, and qualifications that are sufficiently similar to warrant their inclusion within one range of basic pay. Each grade includes 10 fixed rates of pay through which employees advance based on satisfactory job performance and length of service.

$10,000, up to $25,000. Any award that would grant over $25,000 to an individual employee must be reviewed by OPM for submission to the President for approval.

Quality step increases: Agencies have the authority to increase an employee's pay by providing an additional step increase to an employee who has received the highest rating of record available in the agency's performance appraisal program.

Training and education costs reimbursement: Agencies can pay or reimburse an employee for all or part of the necessary expenses for training and education, including the costs for college tuition. Agencies may require service agreements for training of long duration or of high cost.

Advance payments for new appointees: Agencies may advance a new hire up to two paychecks so that a new employee can meet living and other expenses.

Special salary rates: Agencies may request a higher salary rate for an occupation or group of occupations nationwide or in a local area based on a finding that the government's recruitment or retention efforts are, or would likely become, significantly handicapped without those higher rates. The minimum of a special rate range may exceed the maximum of the corresponding grade by as much as 30 percent. However, no special rate may exceed the rate for Executive Level V (currently $110,700). A special rate request must be submitted to OPM by department headquarters and must be coordinated with other federal agencies with employees in the same occupational group and geographic area.

Dual compensation waivers for retirees: On March 30, 1998, OPM issued a memorandum announcing that agencies could reemploy federal retirees (civilian and military) to work specifically on the Year 2000 conversion without the usually required reduction in the retiree's salary or military annuity. With OPM's determination that the Year 2000 computer conversion problem is an "unusual circumstance," agencies can request delegated authority from OPM to rehire former federal personnel (up to a maximum number of individual exceptions approved by OPM) on a temporary basis through March 31, 2000.

Premium pay for employees performing emergency work: Agencies have authority under the law and OPM regulations to make exceptions to the

biweekly limitation on premium pay (including overtime, night, and holiday pay) when the head of an agency or his or her designee determines that an emergency involving a direct threat to life or property exists. In its March memorandum, OPM also encouraged agency heads to exercise this authority in the case of any employee who performs emergency work to resolve a direct threat to property (including monetary errors or cost) in connection with updating computer systems to prevent malfunction, erroneous computations, or other problems associated with the Year 2000. By exercising this authority, agencies will be able to compensate employees who perform significant amounts of overtime work related to the Year 2000 problem, as long as the total of their basic pay and premium pay does not exceed a certain rate.[13]

Exclusions from early retirement programs: On June 15, 1998, OPM issued interim regulations allowing agencies, with OPM approval, to limit the scope of voluntary early retirement offers when separating or downgrading employees in a major reorganization, a major reduction in force, or a major transfer of functions. Agencies can limit their retirement offers on the basis of (1) occupational series or level, (2) organizational unit, (3) geographic area, (4) specific window periods, (5) other similar nonpersonal factors, or (6) any combination of these factors that the agency determines appropriate. Using this tool, agencies can exclude critical Year 2000 positions from any voluntary early retirement program it offers.

Retention allowances for groups or categories of employees: On June 23, 1998, OPM issued interim regulations allowing agencies to authorize a retention allowance of up to 10 percent of an employee's rate of basic pay (or up to 25 percent with OPM approval) for a group or category of employees such as computer programmers and system engineers. Retention allowances authorized for a category of employees must be based on a written determination that (1) the category of employees has unusually high or unique qualifications, or (2) the agency has a special need for the employees' services that makes it essential to retain the employees in that category, and (3) it is reasonable to presume that there is a high risk that a significant number of employees in the targeted category are likely to leave federal service in the absence of the allowance.

Conversion Council Is Identifying Solutions to Workforce Issues

The Conversion Council's Year 2000 Workforce Issues working group began meeting in May 1998 to address some of the Year 2000 workforce issues in both the government and private sector, focusing on three areas:

[13]An employee's total annual salary is not to exceed the rate for GS-15, step 10.

(1) raising awareness of the Year 2000 problem, (2) helping managers assess their particular situations, and (3) connecting managers with solution-providers, including programmers, project managers, and those familiar with embedded systems. In July 1998, the working group released a draft sector action plan which lists key activities that the group is undertaking. Specifically, the group

- established an Internet site to link information technology workers with the companies that need them to solve the Year 2000 problem;[14]
- is attempting to determine the effect of workforce issues on local communities by surveying community colleges; and
- is exploring outreach activities, such as having community colleges raise awareness of the Year 2000 problem within their communities and assist in solving the problem.

Although some of these initiatives may benefit the government, the working group is clearly adopting a nationwide focus and is not solely targeting the federal workforce issue.

CIO Council Is Studying the Workforce Challenge

In March 1998, the CIO Council tasked its Education and Training committee with crafting recommendations and legislation by May 1998 to help agencies recruit and retain information technology personnel. However, the committee found that in order to develop recommendations, it first needed more information about the problem.

In May, the committee formed five focus teams to study the federal information technology workforce challenge. The focus teams will address the following areas: (1) national workforce strategies, (2) federal workforce planning, (3) recruitment, (4) retention, and (5) executive development. Each team will present its findings at a forum of CIO Council Members, Human Resource Council members, and OPM personnel currently planned for November 1998. The committee expects to prepare a final conference report to the CIO Council after the November 1998 forum.

According to the Co-Chair of the Committee, part of the study will be focused specifically on the Year 2000 personnel issue and determining the extent and scope of the personnel problems that exist for the Year 2000 problem.

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[14]This site is part of the Labor Department's electronic America's Job Bank and America's Talent Bank (Internet databases).

It is unclear, however, that this committee will produce timely recommendations because the final report is scheduled to be issued after November 1998, which may be too late to address the Year 2000 workforce issues.

Effectiveness of Year 2000 Workforce Initiatives Not Yet Assured

While the executive councils and OPM have initiatives underway to help resolve Year 2000 workforce issues, it is not yet known if these efforts will effectively address federal agencies' concerns. OPM has developed new human resources management flexibilities, the Conversion Council working group is identifying solutions that are applicable to private industry, and the CIO Council is studying the problem. No organization, however, is working with individual agencies to determine how significant their personnel concerns are, and if they can be adequately resolved through existing human resources management tools. Given that the potential consequences of having an inadequate workforce to tackle critical Year 2000 conversions are severe, such an endeavor seems worthwhile.

Conclusions

A significant number of agencies have reported concerns about the availability of information technology personnel needed to address their Year 2000 problems. Also, the executive councils and OPM have a number of initiatives underway to address perceived personnel shortages. However, it is not yet known whether these efforts will ensure an adequate supply of qualified personnel to solve the government's Year 2000 problem.

Various organizations have responsibilities in this arena. While individual agencies are in the best position to determine if current tools adequately resolve their own Year 2000 personnel issues, OMB is responsible for overseeing federal agencies' responses to the Year 2000 problem, and OPM has both the knowledge of existing personnel management options and, in some cases, the authority to waive existing rules or develop new approaches.

The workforce issue could quickly become more complicated. As awareness of the criticality of the Year 2000 problem grows throughout government and industry, there is a chance that competition for limited skilled personnel will increase. If this more vigorous competition occurs, the government may find it increasingly difficult to obtain and retain the skilled personnel needed to correct its mission critical systems in time.

Given the adverse consequences of any staffing shortages, it is critical that agencies be able to quickly determine if mechanisms currently exist to resolve personnel issues or if additional solutions are needed.

Recommendations

Given the likelihood that critical government operations will cease if key systems are not made Year 2000 compliant, we recommend that the Director of the Office of Management and Budget, as part of the agency's monitoring responsibilities for the government's Year 2000 program, determine if recent OPM initiatives have satisfactorily addressed agencies' reported personnel problems.

If these problems have not been addressed by existing OPM tools, the Director of the Office of Management and Budget should designate an OMB official who, together with OPM and the CIO Council, would proactively and quickly help individual agencies resolve their Year 2000 workforce concerns.

We also recommend that the Director of the Office of Management and Budget work with the CIO Council to expedite the portions of its ongoing study that are relevant to the Year 2000 problem, with a goal of issuing its Year 2000-related recommendations as soon as possible.

Agency Comments

The Chairman of the President's Council on Year 2000 Conversion, as well as officials representing the CIO Council, OMB, and OPM provided oral comments on a draft of this report. These officials concurred with the report and our recommendations. They also offered several technical suggestions which we have incorporated as appropriate.
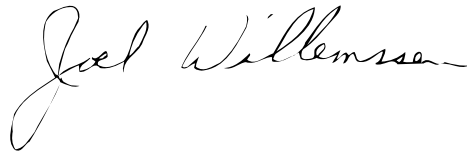
We are sending copies of this report to the Chairmen and Ranking Minority Members of the Senate and House Committee on Appropriations and the House Committee on Government Reform and Oversight; the Ranking Minority Member of the House Committee on Banking and Financial Services; the Co-Chairs of the House Year 2000 Task Force; the Chairman of the President's Council on Year 2000 Conversion; the Director of the Office of Management and Budget; and the Director of the Office of Personnel Management. Copies will also be made available to others upon request. If you have any questions about this report, please contact us at (202) 512-6253 and (202) 512-8676, respectively. We can also be reached by

e-mail at *willemssenj.aimd@gao.gov* and *brostekm.ggd@gao.gov*. Major contributors to this report are listed in appendix III.

Sincerely yours,

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Contents

Abbreviations

CIO	Chief Information Officer
GS	General Schedule
OMB	Office of Management and Budget
OPM	Office of Personnel Management

Scope and Methodology

To determine the nature and extent of the Year 2000 personnel issues being reported by federal agencies, we reviewed and analyzed the Year 2000 progress reports submitted to OMB by 24 large agencies in February, May, and August 1998, by 40 of the 41 small agencies and entities in April and May 1998,[1] and by 9 of those same small agencies and entities that were requested to report in August 1998. In addition, when personnel issues were not specifically addressed by these agencies in their progress reports or when the progress reports were not submitted to OMB, we conducted telephone interviews with agency officials to determine if the agencies were experiencing personnel problems related to the Year 2000 problem. Further, after reviewing the August 1998 reports, we conducted telephone interviews with agency officials when an agency was newly reporting it had no personnel problems. We did this to determine if prior concerns had been resolved. We did not independently assess the reliability of the information provided by the agencies.

To identify what is being done to address personnel shortages related to the Year 2000 problem, we evaluated the Year 2000 personnel efforts of OPM, the Human Resources Technology Council, and the CIO Council's Education and Training and Year 2000 Committees. We also reviewed the efforts of the Workforce Issues Working Group of the President's Council on Year 2000 Conversion. In addition, we interviewed officials from each of these groups.

We conducted our review from May 1998 through August 1998 in accordance with generally accepted government auditing standards. We provided a draft of this report to the Chair of the President's Council on Year 2000 Conversion, the Chair of the CIO Council, and OPM and OMB management and incorporated their comments as appropriate.

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[1]OMB did not receive a report from the Federal Home Loan Mortgage Corporation.

Agencies' Information Technology Personnel Concerns

Table II.1 summarizes the concerns identified by the various agencies and other entities in their reports to OMB. In cases where the agencies and entities did not specifically report on personnel issues, we interviewed agency officials to determine if the agencies were experiencing personnel problems related to the Year 2000 problem. Also, in cases where agencies newly reported that they had no personnel problems in August 1998, we interviewed agency officials to determine if prior concerns had been resolved. We did not independently assess the reliability of the information provided by the agencies. Table II.2 lists the agencies and entities that identified no concerns with the availability of personnel to address the Year 2000 problem.

Table II.1: Agencies Reporting Personnel Problems

Agency	Description of in-house personnel issue	Description of contractor issue
Large departments and agencies (13)		
Agency for International Development	The agency is experiencing increased attrition, and reported concern with the short supply of human resources and the upward pressure on salaries of key personnel.	A contractor hired to perform legacy system maintenance and Year 2000 compliance services did not supply the key officials as provided in the contract for 5 weeks.
Agriculture	The department is encountering high turnover and is finding it difficult to compete with higher salaries being offered by private industry.	Vendors are finding it increasingly difficult to bring on contract employees without substantial increases in contract dollars and have lost contract employees who have left for better paying positions.
Commerce	The department reported that it continues to experience difficulties in finding and hiring qualified information technology personnel.	A key contractor was unable to provide qualified staff, causing contract delays.
Energy	The department reported that one facility has experienced difficulty in retaining and recruiting programming resources for the Year 2000 effort.	Efforts to contract for mainframe systems programmers at one facility have not been successful.
Environmental Protection Agency	The agency experienced problems in finding programmers needed to fix key payroll systems.	While the agency has located contractor resources, the costs are higher than the agency has historically paid.

(continued)

Agency	Description of in-house personnel issue	Description of contractor issue
Interior	The department reported concern that unforeseen retirements could affect its Year 2000 efforts.	
Justice	The department is experiencing difficulty acquiring and retaining skilled personnel, particularly COBOL programmers.	The department is encountering problems in obtaining contractor support with necessary programming skills.
Labor	The department is experiencing problems in acquiring and retaining skilled programmers.	The department reported concerns with the availability of trained contractor staff and that the turnover rate tends to be high due to current market conditions.
National Aeronautics and Space Administration		The Ames Research Center, located in the Silicon Valley area, is finding it a challenge to hire qualified contract programmers.
State	The department experienced high turnover in systems support personnel, and is now facing severe staffing shortages.	The department reported that recruiting to replace contract systems programmers has taken more time than in past years and has resulted in a labor rate increase.
Transportation		The department reported that one agency's contractors have experienced problems in finding qualified programmers.
Treasury	The department encountered an increased rate of attrition of its information systems workforce. It reported that skilled programmers, especially those with skills in legacy platforms, are in strong demand with the private sector, which can pay significantly higher salaries than the government.	

(continued)

Agency	Description of in-house personnel issue	Description of contractor issue
Veterans Affairs	The department reported that recruiting is very intensive for Year 2000 professionals in some geographic areas and expressed the concern that government employees may leave for the private sector because of the lucrative "finders fees" being advertised.	Contractors are having difficulty finding and retaining personnel.
Small agencies and other entities (10)		
Farm Credit Administration	The agency reported that retention and recruitment could become key issues if key computer programmers and/or network personnel decide to leave the agency.	
Federal Communications Commission		The agency expressed concern about retaining sufficient qualified contractors to carry out needed work as the demand for Year 2000 programmers increases.
Federal Deposit Insurance Corporation		The agency has encountered problems with contractors who are losing personnel for higher salaries at other contractors. When replacing the contractor staff, they are increasing the hourly rate.
National Archives and Records Administration	The agency reported that it has insufficient personnel resources to accomplish all Year 2000 renovation, testing, and implementation work in-house.	
National Credit Union Administration	The agency experienced delays in scheduling the conversion of its systems due to competing workloads. Also, it has experienced difficulties in hiring senior Year 2000 program officials.	

(continued)

Agency	Description of in-house personnel issue	Description of contractor issue
Neighborhood Reinvestment Corporation		The agency has encountered increased competition for skilled Year 2000 personnel, and has had to settle for Year 2000 contractors with fewer skills than needed because the contractors that possessed all the desired skills generally cost too much. Also, the agency reported that its consultants are paying their staffs more to retain them, and these costs are being passed on to the agency.
Office of Administration, Executive Office of the President	The office reported that the Year 2000 program is severely straining the workload of existing information systems and technology personnel, and that any diversion of personnel to the Year 2000 program creates a potential support problem for ongoing or day-to-day operations.	The office reported that finding contractor personnel with the appropriate skill level to analyze legacy systems and to recommend alternatives continues to be a problem.
Peace Corps	The corps reported its concerns with retaining information resources management staff and filling vacancies.	
Tennessee Valley Authority	The agency has encountered problems matching information technology skill sets with specific Year 2000 needs and has found that there is a strong employment market for information technology skills. It also reported that salaries have increased for all information technology skills, not just for Year 2000 staff.	
U.S. Postal Service	The service reported that retaining skilled resources needed for remediation and testing continues to be a challenge which is exacerbated by a limited labor pool.	The service reported that retaining skilled contractor staff continues to be a challenge.

Table II.2: Agencies Not Reporting Personnel Problems in Their Latest Reports to OMB[1]

Large Departments and Agencies (11)
Defense
Education
Federal Emergency Management Agency
General Services Administration
Health and Human Services
Housing and Urban Development
National Science Foundation
Nuclear Regulatory Commission
Office of Personnel Management
Small Business Administration
Social Security Administration
Small Agencies and Other Entities (31)
Armed Forces Retirement Home Board
Commodities Futures Trading Commission
Consumer Product Safety Commission
Corporation for National and Community Services
Defense Nuclear Facilities Safety Board
Equal Employment Opportunity Commission
Export-Import Bank of the United States
Federal Election Commission
Federal Energy Regulatory Commission
Federal Home Loan Mortgage Corporation
Federal Housing Finance Board
Federal Reserve System
Federal Retirement Thrift Investment Board
Federal Trade Commission
John F. Kennedy Center for the Performing Arts
Legal Services Corporation
National Gallery of Art
National Labor Relations Board
National Mediation Board
National Transportation Safety Board
Overseas Private Investment Corporation
Pension Benefit Guaranty Corporation
Railroad Retirement Board
Securities and Exchange Commission
Selective Service System

(continued)

Small Agencies and Other Entities, cont.

Smithsonian Institution
U.S. Arms Control and Disarmament Agency
U.S. Enrichment Corporation
U.S. Information Agency
U.S. International Trade Commission
U.S. Trade Representative, Executive Office of the President

[1] Four large and three small agencies did not state concerns in their most recent reports to OMB, but told us of them in subsequent discussions. These agencies are not included in this list.

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