



U.S. Department of the Interior
Office of Inspector General

EVALUATION REPORT

**YEAR 2000 READINESS OF
AUTOMATED INFORMATION SYSTEMS AT
THE BUREAU OF RECLAMATION**

**REPORT NO. 99-I-165
JANUARY 1999**

BACKGROUND

The "Y2K problem" is the term used to describe the potential failure of information technology systems, applications, and hardware related to the change to the year 2000. Many computer systems that use two digits to keep track of the date will, on January 1, 2000, recognize "double zero" not as 2000 but as 1900. This could cause computer systems to stop running or to start generating erroneous data. The problem has been recognized as nationally significant by the President in Executive Order 13073, issued in February 1998. The Secretary of the Interior, in a December 1997 memorandum, stated that the Y2K problem was critical to the Department in meeting its mission and that resolution of the problem was one of his highest priorities. Further, Office of Management and Budget Memorandum 98-02, "Progress Reports on Fixing Year 2000 Difficulties," issued on January 20, 1998, requires all Federal executive branch agencies to ensure that Federal Government systems do not fail because of the change to the year 2000 and to have all systems, applications, and hardware renovated by September 1998, validated by January 1999, and implemented (that is, "fixes to all systems--both mission critical and non-mission critical") by March 1999. The Office of Management and Budget, in Memorandum 98-02, states that it is to provide "information to the Congress and the public as part of its [Office of Management and Budget's] quarterly summary reports on agency progress... [and] to report on the status of agency validation and contingency planning efforts and on progress in fixing. equipment that is date sensitive."

The Department has developed the "Department of the Interior Year 2000 Management Plan," which focuses on the resolution of the Y2K problem and provides an overall strategy for managing Departmental mission-critical systems and infrastructure. The Department has a multitiered approach to managing the Y2K problem that includes a top tier, which comprises the Secretary of the Interior; the Information Technology Steering Committee, which consists of the Chief of Staff and Assistant Secretaries; and the Chief Information Officer, who is responsible for the Department's Y2K issues. This tier, which represents senior-level Departmental managers, provides the Y2K project's direction and resources and ensures accurate reporting to external organizations, such as the Office of Management and Budget and the Congress. A Departmentwide Y2K project team, which reports to the Chief Information Officer and comprises representatives from each agency and the Office of the Secretary, is tasked with developing the Department's "Year 2000 Management Plan," refining inventory data on the Department's mission-critical and information technology portfolio systems,¹ and monitoring and reporting the progress of each conversion. In addition, a Y2K Embedded Microchip* Coordinators Team has been established to inventory

¹The portfolio is an inventory listing of 13 crosscutting or sensitive systems that are receiving attention at the Secretarial level.

*Embedded microchips are "integrated circuits (miniature circuit boards)" that control "electrical devices," which include "elevators; heating, ventilation, and air conditioning (HVAC) systems; water and gas flow controllers; aircraft navigational systems; ... medical equipment"; and office devices such as telephones, facsimile machines, pagers, and cellular telephones. (Department of the Interior's Office of Managing Risk and Public Safety "Year 2000 Embedded Microchip Hazards" [Web site])



United States Department of the Interior

OFFICE OF INSPECTOR GENERAL
Washington, DC. 20240

JAN - 8 1999

EVALUATION REPORT

Memorandum

To: Commissioner, Bureau of Reclamation
Director, Denver Administrative Service Center, Bureau of Reclamation

From: Robert J. Williams *Robert J. Williams*
Assistant Inspector General for Audits

Subject: Evaluation Report on Year 2000 Readiness of Automated Information Systems at the Bureau of Reclamation (No. 99-I-165)

INTRODUCTION

This report presents the results of our evaluation of the year 2000 (Y2K) readiness of automated information systems at the Bureau of Reclamation and the Bureau's Denver Administrative Service Center. The objective of our review was to determine whether the Bureau inventoried its automated information systems and identified those systems that were mission critical and were not Y2K compliant and whether the Bureau and the Service Center (1) developed auditable cost estimates for renovating systems to be Y2K compliant; (2) identified, by name, individuals responsible for ensuring that the Bureau is Y2K compliant; (3) ensured that responsible individuals' personnel performance evaluation plans included critical elements related to identifying and remedying Y2K problems; (4) developed a credible plan that included milestones and a critical path to ensure that the Bureau is Y2K compliant; and (5) developed a contingency plan that would address the failure of any part of the systems not being Y2K ready. This review was conducted at the request of the Department of the Interior's Chief Information Officer to assist the Information Officer in monitoring the progress of Departmental agencies in ensuring Y2K readiness, implementing Y2K compliant systems, and validating the accuracy of the information reported by the Departmental agencies to the Chief Information Officer.

and monitor embedded microchip technology Y2K problems. The team is led by the Office of Managing Risk and Public Safety and comprises representatives of the eight Departmental agencies, the Denver Administrative Service Center, and various Departmental offices.

The Department's May 15, 1998, "Progress Report," which was submitted to the Office of Management and Budget, reported that the Department had 91 mission-critical systems, of which the Bureau of Reclamation had 16 systems (see Appendix 1). In addition, the Federal Personnel Payroll System (FPPS), which was developed and maintained by the Service Center, is 1 of the Office of the Secretary's mission-critical systems and is 1 of the Department's 13 information technology portfolio systems. To address the Y2K problems, the Bureau established a Y2K project management structure. The structure included multiple "Coordination Teams," which were headed by an executive Y2K manager who is the Director of the Management Services Office, and the teams included the Reclamation Information Resources Management Coordinator, the Manager of the Policy and Program Management Group, the Bureau's IT (Information Technology) Security Manager, and Y2K coordinators at Bureau program and regional offices. The Service Center also established a Y2K project management structure that includes a Y2K executive, a Y2K program manager, a Y2K coordinator, and three Y2K program element leaders.

SCOPE OF EVALUATION

To accomplish our objective, we reviewed the documentation available that supported the Bureau's information submitted to the Department's Chief Information Officer for the May 1998 "Progress Report" and the documentation available that supported the information submitted by the Service Center to the Office of the Secretary. We performed our evaluation during April through July 1998 at the Reclamation Service Center's Management Services Office and the Denver Administrative Service Center, located in Denver, Colorado, and the Bureau's Eastern Colorado Area Office, located in Loveland, Colorado. We interviewed personnel responsible for project coordination to identify the Bureau's and the Service Center's Y2K plans and progress. We also interviewed personnel involved in various aspects of the Y2K project, including coordination, compliance identification, software remediation, and project management.

The evaluation was conducted in accordance with the "Quality Standards for Inspections," issued by the President's Council on Integrity and Efficiency, and included such tests and inspection procedures considered necessary to accomplish the objective. Our conclusions on the status of the progress made by the Bureau in addressing and remediating Y2K problems were based on reviews of documentation maintained by the Management Services Office and discussions with the Y2K coordinators throughout the Bureau and with individuals performing remediation or replacement of noncompliant applications or hardware. Also, our conclusions on the status of the progress made by the Denver Administrative Service Center were based on reviews of documentation and discussions with the Y2K program manager, the Y2K coordinator, the program element leaders, and individuals performing remediation or replacement of noncompliant applications or hardware. As specifically agreed to in our discussions with the Department's Chief

Information Officer, we did not validate or certify that the Bureau's or the Service Center's systems were Y2K compliant.

RESULTS OF EVALUATION

Regarding the six areas that the Chief Information Officer requested us to evaluate, we found that the Bureau had completed actions for two areas, had partially completed actions for three areas, and had not completed action for one area. Specifically, the Bureau had designated responsible officials and had inventoried its automated information systems, but the Department's Office of Information Resources Management agreed that the Bureau had to report only 16 of its 48 noncompliant mission-critical systems. Additionally, the Bureau had not included critical elements related to identifying and remedying Y2K problems in all responsible individuals' personnel performance evaluation plans; had not included all systems in its master plan, which had completion dates that were inaccurate; and had contingency plans that may not be adequate. For the remaining area, the Bureau had not developed auditable cost estimates. Because actions have not been completed for all areas, we believe that there is a risk that the Bureau may not meet the Office of Management and Budget's target date of March 1999 for having compliant Y2K systems implemented.

Additionally, of the five areas that the Chief Information Officer had requested us to review, we found that the Denver Administrative Service Center had completed actions for three areas, had not completed actions for one area, and had determined that one area was not applicable. Specifically, the Service Center had developed a credible plan, including milestones; had designated responsible individuals; and had updated the annual personnel performance evaluation plans. However, the Center had not completed action on developing a contingency plan but had determined that the development of auditable cost estimates was not applicable to FPPS. As a result of the progress being made by Service Center Y2K project management, we believe that the Service Center will meet the Office of Management and Budget's target date of March 1999 for having compliant Y2K systems implemented for FPPS if the Y2K project proceeds as scheduled. If delays are encountered, development of contingency plans may be necessary.

The specific actions taken by the Bureau of Reclamation and the Service Center related to each area and other issues affecting the Bureau's and the Service Center's Y2K progress are discussed in the paragraphs that follow.

Automated Information Systems Inventory

Although the Bureau had performed an inventory of all of its automated information systems except for international project offices and identified 48 mission-critical systems. the Bureau's May 1998 "Quarterly Report" to the Department's Chief Information Officer showed only 16 noncompliant mission-critical systems. We found that the Bureau was reporting only 16 systems as mission critical because its Y2K project management did not use the Department's criterion for reporting mission-critical systems, which states that "those systems that when their capabilities are degraded, the organization realizes a resulting loss

of a core capability or life or property are threatened.” Although Bureau Y2K project management did not use the Department’s criterion for reporting, the Bureau received approval from the Department’s Office of Information Resources Management to report only those systems that were to be repaired because of the large number of mission-critical systems that would otherwise have to be reported and managed. Therefore, Bureau Y2K project management said that it tracked and reported only systems that met all of the following Bureau criteria: (1) were mission critical, (2) were not Y2K compliant, (3) were date dependent, and (4) were being redeveloped or repaired. However, Office of Management and Budget Memorandum 98-02 requires that executive agencies report the “total number of mission-critical systems,” as well as the “number compliant, number being replaced, number being repaired, and number being retired.” As a result, the Bureau and Departmental Y2K project management were not tracking the replacement of Bureau mission-critical systems, such as the Mid-Pacific Region’s Sutron Database System and the Centralized Water and Power System Control system, that were not Y2K compliant and were not reporting these systems to the Office of Management and Budget. However, in its September 23, 1998, response (Appendix 2) to the draft report, the Bureau stated that it is providing “high-level, ongoing management attention to ensure that all mission-critical applications will be Y2K compliant in sufficient time prior to January 2000.”

Additionally, Y2K project management had not initially ensured that systems which had been identified by Bureau regional personnel as Y2K compliant were Y2K compliant. However, Y2K project management stated in exit conferences that a process was in place as of July 1998 to ensure that systems which had been identified by Bureau regional personnel as Y2K compliant are Y2K compliant.

We also found that the Bureau’s method of reporting mission-critical systems to the Department’s Chief Information Officer did not focus on the Bureau’s mission and ability to perform its core capabilities and that each region was allowed to define its mission-critical systems. Therefore, the reporting of mission-critical systems was not consistent within the Bureau. For example, the Bureau tracked and reported the Upper Colorado Region’s Colorado River Storage Project (CRSP) and the Great Plains Region’s Wyoming Area Office Supervisory Control and Data Acquisition(SCADA)³ systems as mission critical. However, there are SCADA systems in the other regions, such as the Lower Colorado and the Mid-Pacific, that were identified as mission critical and not Y2K compliant at the time the inventory was completed but were not reported. By not ensuring that all mission-critical systems which support core capabilities are Y2K compliant before the year 2000, the risk is increased that some of the Bureau’s systems may fail and that the Bureau may not be able to deliver water and hydroelectric power to its customers without incurring significant personnel costs.

The Department’s Chief Information Officer requested that we determine the progress of the Bureau and the Service Center in addressing embedded microchips in information systems

³SCADA systems are systems that interface within selected water projects and are used by the Bureau to monitor and control water flow and hydroelectric power.

and facilities. We found that the Bureau and the Service Center, at the time of our review, had begun to inventory embedded microchips in information systems and facilities.

Auditable Cost Estimates

Of the 16 mission-critical systems reported to the Department's Chief Information Officer, documentation was maintained for 2 systems: the Technical Service Center's Data Acquisition and Management System (DAMS) and the Upper Colorado Region's CRSP SCADA system. We found that the cost estimate of \$9,000 for DAMS was auditable and that the revised estimate of \$285,300 for the Upper Colorado Region's CRSP SCADA system also was auditable.

Although cost estimates reported for the remaining 14 mission-critical systems were not auditable, we attempted to determine whether the methodologies used by Bureau personnel to develop the cost estimates were reasonable. Based on information from regional personnel responsible for developing the cost estimates, we found that the methodologies used varied. For example, cost estimates for the Modsim, the PNOPER, and the Hydromet PN1 systems in the Pacific Northwest Region were initially based on total lines of source code⁴ multiplied by \$1 SO. However, personnel in the Region said that because they believed the results were too high, they lowered the amounts for reporting purposes based on "best estimates." In addition, the EM340 terminal emulator in the Pacific Northwest Region was renovated to be Y2K compliant. However, we found that the renovation costs were \$35 rather than the \$5,000 reported. For the SCADA system in the Great Plains Region's Wyoming Area Office, personnel in the Region said that the amount was a "best estimate." For the Hydromet Support and the North Platte River Daily Water Accounting systems, which also are in the Great Plains Region, personnel in the Region said that the estimates were based on total lines of source code multiplied by \$ 1.50. Additionally, renovation of the Hydrological River Operations Study System (HYDROSS) at the Technical Service Center was estimated to cost \$5,680, which, according to the Y2K coordinator, was based on an estimated 2 weeks of effort (80 hours) multiplied by \$60 per hour. However, this formula would result in an estimate of \$4,800. In its response to the draft report, the Bureau stated that the costs were \$500 to renovate the EM340 terminal emulator and \$5,680 for the HYDROSS. However, because adequate documentation to support these costs was not provided and because the Bureau stated in its response that "in most instances there have been no means to track Y2K costs," we determined that the Bureau's reported estimated and actual costs were not auditable.

In its response to the draft report, the Bureau stated that the Office of Inspector General did not "expect consistent and auditable cost estimates at this point." However, we stated that we did not expect the Bureau to expend resources in correcting prior estimates but to ensure that future estimated and actual costs were supported and auditable.

⁴Lines of source code are statements and instructions used by the computer to execute the tasks of computer programs. (Computer Desktop Encyclopedia? Version 9.4, 4th quarter, 1996)

According to Service Center Y2K project management, the Service Center had not developed any cost estimates related to FPPS because the System was reported as compliant by design. Project management was aware that products and the mainframe operating system which were used to develop and operate FPPS were identified as not Y2K compliant. However, Service Center Y2K project management said that they considered the upgrades to these systems to be part of normal maintenance and not directly related to Y2K. Consequently, the cost estimates related to Y2K remediation were not applicable. However, if costs specifically related to remediating Y2K problems are identified, these costs should be reported to the Department's Chief Information Officer.

Designation of Responsible Individuals

We found that the Bureau had specifically designated, by name, the Y2K executive, the Bureau Y2K coordinator, and Y2K coordinators in each of the Bureau's regional offices in its "Year 2000 IT Comprehensive Plan." In addition, the Service Center had specifically named a Y2K executive, a Y2K program manager, a Y2K coordinator, and three Y2K program element leaders. Therefore, the Bureau and the Service Center had completed this requirement.

Annual Personnel Performance Evaluation Plans

The Secretary of the Interior's December 1997 memorandum required that "a critical performance element for identifying and remedying" the Y2K problem be included as part of each responsible official's annual performance plan. Responsible officials are defined in the memorandum as agency directors, agency Y2K executives, agency information resources management coordinators, safety officials, and all others as determined by the Y2K executives. We found that 5 of the 13 Bureau Y2K coordinators, the Bureau Information Resources Management Coordinator, and the Bureau Y2K executive had elements addressing Y2K objectives in their annual personnel performance evaluation plans. However, the remaining eight Bureau Y2K coordinators did not have such elements included in their annual personnel performance evaluation plans.

We found that all six members of the Denver Administrative Service Center's Y2K project team had elements addressing Y2K objectives in their annual personnel performance evaluation plans.

Plan for Milestones

We found that the Bureau had provided a reasonable basis for developing the master plan and critical paths for the systems reported to the Department as part of the progress reports. Specifically, the milestones established in the Bureau's master plan were developed by system owners or other responsible persons in each region who were knowledgeable of the systems, and the Bureau Y2K coordinator used a project management **software** tool to assist in developing the plan. However, as discussed in the section "Automated Information Systems Inventory" in this report, not all mission-critical systems had been included in the

master plan. In addition, although the initial milestones appear to be reasonable, some of the completion dates reported in the Bureau's progress report were inaccurate (see the section "Other Issues").

The Service Center had developed five action plans: (1) the "Year 2000 Conversion Project Action Plan," (2) the "DASC Telecommunications Year 2000 Compliance Plan," (3) the "DASC LAN/PC Systems Year 2000 Compliance Plan," (4) the "Y2K Embedded Chip Project Plan," and (5) the "FPPS Year 2000 Conversion Action Plan." All of these plans contain milestones and critical paths to address Y2K compliance for each system. Although these plans were internal Service Center documents that were not submitted to the Department's Chief Information Officer and dates were revised as necessary, we believe that the plans adequately identified milestones and critical areas. As of May 1998, these action plans had completion dates of March 1999 or earlier.

Contingency Plans

We found that the Bureau had contingency plans for 15 of the 16 reported mission-critical systems. The Bureau did not develop a contingency plan for the Pacific Northwest Region's EM340 system because Bureau management stated that this system was compliant and a contingency plan was not necessary. The contingency plans for the 15 remaining systems were not specifically related to Y2K but were existing plans for disasters such as floods or earthquakes at the project sites. If the systems fail on January 1, 2000, the Bureau's contingency plans are to perform the functions of these systems manually based upon the procedures defined in the disaster plans. The disaster recovery plans may not be adequate in the case of Y2K failures because of the possible length of time required to remediate the affected systems and the ready availability of people to repair lines of code or to perform the manual operations. The disaster plans were reviewed for specific projects or clusters of projects, such as for Hoover, Parker, and Davis Dams, and did not assess the impact on the Bureau for the loss of systems such as the SCADA. Further, the plans did not identify the number and experience level of personnel required to operate the Bureau's facilities manually and did not take into consideration the impact that embedded microchips in cellular phones, telephones, radios, and automobiles may have on the Bureau's ability to operate its facilities. For example, we found the following:

- Bureau management said that they believed "people will be available at the power plants to take over [operate the power plants manually]" if the Bureau's noncompliant SCADA systems, including hardware, software, and sensing devices, do not function after December 31, 1999. In the Department's May 1998 "Progress Report" to the Office of Management and Budget, the Bureau requested a waiver to the Dual Compensation Act⁵ from the Office of Personnel Management to hire 10 power plant operators should the SCADA systems fail. In its response, the Bureau stated that two SCADA systems were not Y2K compliant and that "[m]ost operations managers do not expect a need for additional

⁵A waiver from the Act allows the Bureau to hire retired Federal employees without loss or reduction to the employees' entitlements.

help.” Therefore, according to the Bureau, the request for 10 power plant operators was “Reclamation-wide in nature to cover unforeseen contingencies.” However, we continue to believe that if SCADA systems fail and the additional people required to operate water project gates and power plants manually are not readily available, the Bureau may not have control over water flow and its power plants.

- The North Platte River Daily Water Accounting system automates the daily accounting for stream flows, reservoir conditions, and ownership in the North Platte River Basin in Wyoming. We found that if the system fails, the Wyoming Area Office will be prevented from performing the daily accounting of the North Platte River Basin. Wyoming Area Office officials stated that the Bureau has a legal requirement to supply information generated by the system.

In its response to the draft report, the Bureau stated that although the Continuity of Operations Plans did not address the failure of “cellular phones, telephones, radios, and automobiles,” the Bureau “cannot be held responsible for global and common possibilities outside our scope or ability to control.” However, the Bureau stated that it is developing a contingency and management guide for power and water facilities. We believe that when contingency plans are completed, the Bureau will be better able to ensure that its water and power facilities will operate beyond the year 2000.

The Denver Administrative Service Center had not developed contingency plans related to Y2K for the mainframe systems because: according to Service Center Y2K project management, the systems were to be Y2K compliant by the fall of 1998. Service Center Y2K project management stated that if this target date was not met, a contingency plan would be developed.

Other Issues

We found other issues that affect the Bureau’s and the Service Center’s Y2K readiness efforts which should be addressed as follows:

- Data Exchange. The Department of the Interior and the Office of Management and Budget required that an inventory of all data exchanges with outside parties be completed by February 1, 1998, and that coordination with these parties to determine a transition plan occur by March 1, 1998. We found that the Bureau had not met the Office of Management and Budget’s target date in that only 22 of the 33 Bureau field offices responded to the Bureau Y2K coordinator’s request for data exchange information as of May 1998.

The Service Center had inventoried its data exchanges, including external and internal interfaces, and had contacted responsible parties for all but 5 of the 48 interfaces identified in the inventory that were in use. According to Service Center Y2K project management, two of the five interfaces will be retired before the year 2000, and the remaining three interfaces were determined to be the receivers’ responsibility. However, documentation was not available to support that these parties were contacted by Service Center project management to confirm responsibilities.

- **Independent Verification and Validation.** According to Bureau management, the independent verification and validation testing of mission-critical systems being renovated was to be performed internally by Bureau staff because of the expertise needed to test the systems and the cost involved in having independent verification and validation performed by outside contractors. According to Sen-ice Center Y2K project management, the Service Center, at the time of our review, was evaluating the use of a contractor to assist in the independent verification and validation testing of FPPS for Y2K. However, we found that neither the Bureau nor the Service Center had developed independent verification and validation test plans or performed independent verification and validation testing of mission-critical systems as of May 1998.

- **Compliance Reporting.** The Bureau had reported to the Department's Chief Information Officer that the Wyoming Area Office's SCADA system was compliant as of December 1997 except for certification of the system. However, based on information from Great Plains Regional personnel responsible for the system, we found, at the time of our review, that the repaired system had not been implemented. In its response to the draft report, the Bureau stated that the system had been implemented.

The Service Center's mainframe computer, the computer that operates FPPS and the Department's Federal Financial System (FFS), was reported to be compliant as of July 1997. However, we found that the Service Center's version of the mainframe computer operating system was not Y2K compliant and would not be compliant unless more than 100 program temporary fixes were implemented or the system was upgraded to a newer version of the operating system. Service Center Y2K project management said that they planned to upgrade to the newer version of the operating system and to test the upgraded operating system for Y2K compliance by August 1998. In addition, the Service Center reported that FPPS was compliant by design. However, the software products used to develop and operate FPPS were not Y2K compliant (see the section "Auditable Cost Estimates"). These issues were not addressed in the Service Center's information submitted to the Department's Chief Information Officer for the May 1998 "Progress Report."

- **Vendor Certifications.** We found that to determine the Y2K compliance of vendor-supplied hardware and software, Service Center Y2K project management relied on the vendors' written certifications. However, when the vendors' certifications could not be obtained, information contained in the vendors' Internet home pages was used. Although the Service Center had requested written certifications of Y2K compliance from its 25 mainframe software vendors, Service Center Y2K project management had received only letters certifying Y2K compliance for the software in use from 6 of the vendors. As of May 1998, the status of the requests made to the data communication vendors by the Service Center was as follows:

- Responses had not been received from vendors on about 4 percent of the Service Center's components.

- Responses had been received from vendors stating that these components were Y2K compliant on about 18 percent of the components.

- Service Center Y2K project management was still addressing the Y2K problems for 35 percent of its data communication components through planned software upgrades, date independence, and end of life for hardware and software components (no longer needed).

- Service Center Y2K project management relied on Internet site information for the remaining 43 percent of the Service Center's components to ensure Y2K compliance.

However, Service Center Y2K project management stated that all data communication software and hardware would be tested where possible.

- **System Component Consolidation.** The Bureau reported each component of the Pacific Northwest Region's Sutron Hydromet system as an individual mission-critical system. However, personnel in that region responsible for the system said that these components should not have been reported individually. If the components were combined into one mission-critical Hydromet system, the number of mission-critical systems reported for the Pacific Northwest Region would be 5 rather than 10.

- **System Owners.** In the Bureau's Y2K master plan, regional offices rather than personnel were identified as system owners. Although the Bureau's master plan identified a contact (by name) for each of the mission-critical systems reported, we believe that the designation of regional offices as system owners did not meet the intent of the General Accounting Office's "Year 2000 Computing Crisis: An Assessment Guide," which the Department required bureaus to follow for Y2K project management and for identifying system owners.

- **The Federal Financial System.** During our review, we found that Bureau Y2K project management as a customer and Service Center Y2K project management as a service provider were concerned that the FFS Y2K testing may not be completed as scheduled. FFS is used by six bureaus within the Department of the Interior and by other Federal agencies. FFS is being renovated under the Office of the Secretary, and acceptance testing is the responsibility of the U.S. Geological Survey's Washington Administrative Service Center. Further, the Geological Survey's mainframe computer, which is the computer where FFS acceptance testing is performed and where FFS operates for three bureaus, had the same operating system as the Denver Administrative Service Center's mainframe computer (which is not Y2K compliant and will not be compliant unless more than 100 program temporary fixes are implemented or the system is upgraded to a newer version of the operating system). Bureau and Service Center Y2K project management said that they are not certain that FFS can be fully tested at either the Denver or the Washington Administrative Service Center until the upgraded version of the mainframe operating system has been implemented at each Center. Additionally, the originally scheduled completion date of June 1998 for implementation of the renovated FFS was not feasible because the upgrade to the operating system was not available for testing until July 1998, and the Bureau and the Denver Administrative Service Center expressed concerns that problems related to Y2K could be encountered during fiscal year 1999.

On July 30, 1998, we held an exit conference with Y2K project management of the Denver Administrative Service Center and on August 6, 1998, with project management of the Bureau of Reclamation and the Chief Information Officer. Service Center Y2K project management generally agreed with the conclusions contained in this report. However, Bureau Y2K project management expressed concerns regarding our conclusions on the Bureau's reporting of mission-critical systems and adequacy of contingency plans. The Bureau provided additional information in its response. Specifically, the Bureau generally concurred with the report and said that it "will continue to focus on Y2K project issues" and on meeting Departmental and Office of Management and Budget milestone dates. Although the Bureau disagreed with our conclusion regarding the adequacy of its contingency plans and stated that only one SCADA will not be Y2K compliant by January 2000, it cited actions being taken which should enable the Bureau to meet the required milestones for having Y2K compliant mission-critical systems except for the "Mid-Pacific's CVACS." Based on discussions with Bureau Y2K project management and on the response, we made changes to the report as appropriate, and we have not made any recommendations.

Since this report does not contain any recommendations, a response is not required.

The legislation, as amended, creating the Office of Inspector General requires semiannual reporting to the Congress on all audit reports issued, the monetary impact of audit findings, actions taken to implement audit recommendations, and identification of each significant recommendation on which corrective action has not been taken.

We appreciate the assistance of personnel at the Bureau of Reclamation's Management Services Office and regional offices and the Denver Administrative Service Center in the conduct of our review.

**BUREAU OF RECLAMATION/DENVER ADMINISTRATIVE
SERVICE CENTER MISSION-CRITICAL SYSTEMS INVENTORY'**

System Name or Acronym	Description	Estimated Cost for Compliance
Great Plains (GP) Hydromet Support	Provides Hydromet data reporting and maintenance functions and supports the capture and upload of data into Hydromet from outside sources.	\$50,000
EM340	Digital 340 Terminal Emulation software for Hydromet interfaces.	5,000
Hydromet PN 1	Yakima Hydromet System. Collects and processes hydrologic and meteorologic data on a near-real-time basis.	30,000
Inhouse Hydromet	Hydromet data analysis tools. Program uses the information from Hydromet to retrieve, compute, and convert data. This allows users to format reports and use the data for analysis and display.	16,000
Sutron Hydromet	Hydromet data collection, translation, and storage.	75,000
North Platte River Daily Water Accounting (NPRDWA)	Automated daily accounting of stream flows, reservoir conditions, and ownership in the North Platte River Basin in Wyoming.	60,000
Wyoming Area Office Supervisory Control and Data Acquisition (SCADA WYAO)	Monitors and controls 14 power plants and 3 irrigation canals, and controls flows in 5 river systems.	3,000
Inhouse Agricultural and Meteorology Data (AGRIMET)	Data analysis and formatting.	22,500

*Information is from the "Department of the Interior Year 2000 Management Plan." issued in February 1998, and the Bureau of Reclamation's "Y2K Software Application Report," dated February 1998.

System Name or Acronym	Description	Estimated cost for Compliance
Inhouse River Operations	Data analysis tools. Program uses the information from Hydromet to retrieve, compute, and convert data. This allows users to format reports and use the data for analysis and display.	37,500
Model Simulator (Modsim)	River System Operations Simulation. River modeling and simulation program.	20,000
Pacific Northwest Operations (PNOPER)	Real-time hydrologic and meteorologic data to support the Bureau's water resource management mission. Supported functional areas include flood control, hydrologic and structural monitoring related to dam safety, irrigation water supply, power generation, dam operations, and water supply.	15,000
Umatilla Planning Module	River System Operations Simulation. River modeling and simulation program.	20,500
Y akima Planning Model	River Operations Simulation. River modeling and simulation program.	20,000
Data Acquisition and Management System (DAMS)	Instrumentation database.	9,000
Hydrological River Operations Study System (HYDROSS)	Water rights and supply accounting model used in river basin planning studies.	5,680
Colorado River Storage Project Supervisory Control and Data Acquisition (CRSP SCADA)	Remotely controls generation and water bypass for 8 hydroelectric plants, with a total of 19 generating units.	<u>285,300</u> **
Total		<u>\$674,480</u>

**This revised estimated cost is the amount reported by the Department of the Interior to the Office of Management and Budget as of May 1998 in the Department's "Quarterly Progress Report."



United States Department of the Interior

BUREAU OF RECLAMATION
Washington, D.C. 20240

IN REPLY REFER TO:

SEP 23 1998

D-5010

MEMORANDUM

To: Office of Inspector General
Acting Assistant Inspector General for Audits

From: Eluid L. Martinez
Commissioner/

Subject: Comments on the Draft Evaluation Report on Year 2000 Readiness of Automated Information Systems (Assignment No. A-IN-BOR-OOI-98R)

Attached are comments on the Draft Evaluation Report on Year 2000 Readiness of Automated Information Systems (Assignment No. A-IN-BOR-OOI-98R) at the Bureau of Reclamation. We appreciate the opportunity to review and comment on the draft report.

The report reflects a nontechnical review of Year 2000 (Y2K) readiness within Reclamation and the status of the Y2K project in light of Office of Management and Budget and Department of the Interior required guidelines and the six criteria requested for evaluation by the Department's Chief Information Officer. Discussions between our staffs during the preliminary draft review period resulted in many requested corrections which are reflected in the referenced draft. However, we believe several general comments in the report are unsupported opinions of Reclamation operations. Our response reflects only a few of the items of concern from the draft report. Reclamation will continue to focus on Y2K project issues and meet every deadline imposed by the Department and OME.

We appreciate the difficulty of reporting on such a complex subject. We hope you will find the attached comments to be of assistance, and we will be pleased to provide further information or clarification on any of the comments provided.

Attachment

cc: Assistant Secretary - Water and Science, Attention: Carla Burzyk
(w/attachment)

Bureau of Reclamation
Comments on OIG Draft Evaluation Report
Year 2000 Readiness of Automated Information Systems
(Assignment No. A-IN-BOR-116-99R)

General Comments

Results of Evaluation

All known systems were reported in the comprehensive plan sent to the Department of the Interior (DOI) June 1, 1997. Estimated completion dates have proven accurate with less than 5 percent error. For many years Reclamation has had complex Continuity of Operations Plans for all of our facilities. The draft implied these Plans did not address all of the specific and widespread contingencies that could occur as a result of the Y2K problem even though each facility is prepared for any potential disaster, including Y2K calamities. Reclamation is currently in the process of developing a "Y2K Contingency Planning and Management Guide for Power and Water Facilities" which should cover any anticipated shortfalls.

Automated Information Systems Inventory

At the time of the inventory, no definition for mission-critical systems was available from DOI. Reclamation used a combination of definitions from the Department of the Air Force Y2K's criteria with a semblance of the actual mission of our Bureau. Reclamation did initially report more mission-critical systems in an attempt to fully recognize all Y2K issues. However, as a result of discussions with, and as directed by the Office of Information Resources Management (OIRM), Reclamation reduced to 16 the number of mission-critical systems that were to be repaired. Based on this guidance, and as a result of guidance from OIRM, Reclamation did not report mission-critical applications that were not Y2K compliant and were scheduled to be retired or replaced.

Reclamation does, however, recognize the concern expressed by the OIG with respect to ensuring that all mission-critical applications are addressed. In fact, we are cognizant of the need to ensure that these applications will continue to function after January 1, 2000, and are providing high-level, ongoing management attention to ensure that all mission-critical applications will be Y2K compliant in sufficient time prior to January 2000.

Contingency Planning

Reference was made that nowhere in the facilities Continuity of Operations Plans was any consideration made in the event that cellular phones, telephones, radios, and automobiles may fail due to Y2K noncompliance. Reclamation cannot be held responsible for global and common possibilities outside our scope or ability to control. However, it is the nature of our workforce to be at the work site or be readily available to transit to the work site at a moment's notice.

Auditable Cost Estimates

The OIG stated that it did not expect consistent and auditable cost estimates at this point but rather. Reclamation should keep track of Y2K expenses from this point forward.

Specific Comments

1. Page 2. leading paragraph, third sentence: Should read March 1, 1999. This is the artificially mandated due date for implementation of all Y2K software applications. All systems with the exception of the Mid-Pacific's CVACS will be Y2K compliant and implemented by March 1, 1999.
2. Page 6. paragraphs 1 and 2: Since no "special" funding was or is available for Y2K efforts, Y2K costs were and are still taken out of operations and project funds as they currently exist in each office. In most instances there have been no means to track Y2K costs.
3. Page 6. paragraph 2. sentence 5: The actual cost to upgrade the terminal emulator package in EM340 was \$500, and the actual cost to complete the HYDROSS application renovation, including testing and implementation, was \$5,680.
4. Page 7. paragraph 2: We concur that not all Y2K involved personnel had Y2K performance elements in their annual performance plans, including appropriate Reclamation executives. Since then, further **direction** has been disseminated from the Commissioner's office to assure the Y2K mission-critical element has been or will soon be added to all Y2K responsible personnel.
5. Page 8. paragraph 2 under "Contingency Plans": The actual number of noncompliant SCADA systems within Reclamation was two, compared to the numerous SCADA systems found throughout Reclamation. It is believed that ten powerplant operators would more than cover these two SCADA sites. Most operations managers do not expect a need for additional help, since most feel they are already adequately staffed for such an emergency. The original request was Reclamation-wide in nature to cover unforeseen contingencies that may be outside our control.
6. Page 9. Paragraph 5: Reclamation had received no IV&V plan guidance from either DOI or OMB at the time of the audit. However, OMB instructions specifying third party tests and directions have been given to all Y2K involved personnel and offices throughout Reclamation.
7. Page 9. paragraph 6. compliance reporting: The Y2K compliant SCADA system has been implemented at the Wyoming Area Office and is still running. The system did, however, show non-fatal errors relating to the four-digit year just introduced. These have since been repaired.

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