Audit Report

YEAR 2000 CONVERSION AT THE ARMY
MAJOR RANGE AND TEST FACILITIES

Report No. 99-022 October 29, 1998

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Department of Defense

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Acronyms

EPG	Electronic Proving Ground
WSMR	White Sands Missile Range
Y2K	Year 2000

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ARLINGTON, VIRGINIA 22202

October 29, 1998

MEMORANDUM FOR AUDITOR GENERAL OF THE ARMY

SUBJECT Audit Report of Year 2000 Conversion at the Army Major Range and Test Facilities (Report No 99-022)

We are providing this report for information and use. Because this report contains no findings or recommendations, no written comments were required, and none were received

We appreciate the courtesies extended to the audit staff Questions on the audit should be directed to Mr. Raymond A Spencer at (703) 604-9071 (DSN 664-9071) e-mail <rspencer@dodig osd mil> or Mr Michael E Simpson at (703) 604-8972 (DSN 664-8972) e-mail <msimpson@dodig.osd.mil>. See Appendix B for the report distribution The audit team members are listed inside the back cover

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Office of the Inspector General, DoD

Report No. 99-022 **October 29, 1998**
(Project No. 8AS-0032 03)

Year 2000 Conversion at the Army Major Range and Test Facilities

Executive Summary

Introduction. This report is one of a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor DoD efforts in addressing the year 2000 computing challenge Information technology systems have typically used two digits to represent the year, such as "98" representing 1998, to conserve electronic storage and reduce operating cost. However, the year 2000 is indistinguishable from the year 1900 with the two-digit format. As a result of the ambiguity, computers, associated systems, and application programs that use dates to calculate, compare, and sort could generate incorrect results when working with years after 1999

Audit Objectives. Our primary audit objective was to determine whether the Army major range and test facilities are adequately preparing their information technology systems to resolve date-processing issues for the year 2000 computing problem Specifically, the audit determined whether the Army major range and test facilities have complied with the DoD Year 2000 Management Plan. We did not review the management control program related to the overall audit objective because DoD recognizes the year 2000 issue as a material management control weakness area in the FY 1997 Annual Statement of Assurance

Audit Results. The Army is currently on schedule with renovating its business and test information systems for year 2000 compliance at three major range and test facilities We visited these ranges to determine the progress being made and the steps being taken to ensure year 2000 compliance The three ranges had developed their inventory, developed contingency plans, tested all their systems to ensure compliance or noncompliance, and maintained all the necessary documentation The ranges should meet the Army's deadline of completing the implementation phase by December 1998 See Part I for details of the audit results.

Management Comments. We provided management with a draft of the report on August 19, 1998 Because the report contains no findings or recommendations, written comments are not required, and none were received Therefore, we are publishing the report in final form

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Part I - Audit Results

Audit Background

The year 2000 (Y2K) problem is the term most often used to describe the potential failure of information technology systems to process or perform date-related functions before, on, or after the turn of the century. The Y2K problem is rooted in the way that automated information systems record and compute dates For the past several decades, systems have typically used two digits to represent the year, such as "98" representing 1998, to conserve on electronic data storage and reduce operating costs However, the year 2000 is indistinguishable from the year 1900 with the two-digit format As a result of the ambiguity, computers and associated system and application programs that use dates to calculate, compare, and sort could generate incorrect results when working with years following 1999 Calculation of Y2K dates is further complicated because the year 2000 is a leap year, the first century leap year since 1600 The computer systems and applications must recognize February 29, 2000, as a valid date

DoD Y2K Management Plan. The Assistant Secretary of Defense (Command, Control, Communications, and Intelligence), in his role as the DoD Chief Information Officer, issued the "DoD Year 2000 Management Plan" (DoD Management Plan) in April 1997 The DoD Management Plan provides the overall DoD strategy and guidance for inventorying, prioritizing, repairing or retiring systems, and monitoring progress The DoD Management Plan states that the DoD Chief Information Officer has overall responsibility for overseeing the DoD solution to the Y2K problem Also, the DoD Management Plan makes the DoD Components responsible for implementing the five-phase Y2K management process The DoD Management Plan includes a description of the five-phase Y2K management process. The DoD Management Plan, For Signature Draft Version 2 0, June 1998, accelerates the target completion dates for the renovation, validation and implementation phases. The new target completion date for implementation of mission-critical systems is December 31, 1998

In a January 20, 1998, memorandum for the heads of executive departments and agencies, the Office of Management and Budget established a new target date of March 1999 for implementing all corrective actions to all systems The new target completion dates are September 1998 for the renovation phase and January 1999 for the validation phase.

Army Strategy. The Army introduced an action plan and a revised "draft" version to outline the Army Y2K management strategy, provide guidance; define roles, responsibilities, and reporting requirements, and lay a foundation to ensure that no mission-critical failure occurs because of related problems As it has in the past, the Army is placing special emphasis on mission-critical systems, but the Army's goal is to correct all Y2K impacted systems and devices

Army Year 2000 Database. The Y2K Project Office created and maintains the Army Y2K database, which houses Y2K information for Army systems The Y2K Project Office updates the database and uses the information to prepare quarterly reports on the status of Army systems, identifies potential problems, and tracks progress through the five-phase management process Initial population of the database began on September 30, 1996, and continues on a quarterly basis An Army user's manual, posted to the Y2K Restricted Homepage, provides guidelines for using the database

Audit Objectives

Our primary audit objective was to determine whether Army major range and test facilities are adequately preparing their information technology systems to resolve date-processing issues for the Y2K computing problem Specifically, the audit determined whether the Army major range and test facilities have complied with the DoD Management Plan. Appendix A describes audit scope and methodology

Status of the Army Range and Test Facilities Year 2000 Program

The three Army major range and test facilities visited completed the renovation phase in September 1998 All required documentation and certification forms for the compliant systems have been completed as required by the Army Action Plan and the DoD Management Plan. The Army major range and test facilities should be Y2K compliant by December 31, 1999

Year 2000 Program

Army Major Range and Test Facilities. The Army is renovating its business and test information systems for Y2K compliance at their major range and test facilities. We reviewed test systems at three ranges (Aberdeen Proving Ground, White Sands Missile Range [including Electronic Proving Ground], and Yuma Proving Ground) to determine the status of their Y2K programs A discussion of each range follows

Aberdeen Proving Ground. Aberdeen Proving Ground, located in Aberdeen, Maryland, identified 8 systems (127 inventory items) The Y2K project managers have assessed all of their test information systems and are on schedule for renovating or replacing them Six systems (124 line items) were compliant and two (3 line items) were noncompliant We reviewed documentation certifying that six systems (124 line items) are Y2K compliant The project managers assessed the two systems (three line items) that are not Y2K compliant and determined a fix. They did not develop a contingency plan because the fixes for the two systems will be in place and validated by December 31, 1998.

White Sands Missile Range (WSMR). The WSMR, located in White Sands, New Mexico, is renovating its business and test information systems and should meet the Army Materiel Command's deadline for 100 percent renovation completion in September 1998 The Y2K problem remediation and certification is a top priority at WSMR, and the Commanding General is briefed weekly Each WSMR directorate has certified that all compliant systems have a memorandum on file stating that signed certifications exist for all systems that are reported as compliant. The Y2K personnel were developing contingency plans for their noncompliant systems

In June 1998, WSMR reported that 52 percent of 67 systems (941 inventory items) were compliant These numbers also include the systems and inventories at the Electronic Proving Ground. We found several errors in the inventory, but the

WSMR Y2K point of contact took immediate action to update it in July 1998 The WSMR database now reflects 94 systems (2,998 inventory items) These figures will be reported in the next quarterly report

In reviewing documentation of the compliant and noncompliant systems, we noted that some certification forms on file were not signed and dated. We reported this to senior management who took action to correct the discrepancy.

Year 2000 Certification Acid Test. On July 2, 1998, WSMR conducted a live certification test of range equipment including telemetry, optics and radar assets, to determine whether software, hardware and engineering were Y2K compliant. The primary objective was to validate that computers, instrumentation, and the communication infrastructure being used to test missile systems will perform to specification in the year 2000 To support the test, a remotely controlled F-4 Phantom jet flew a predetermined racetrack course over WSMR During the flight, test assets measured, recorded, and analyzed data, while the International Range Instrumentation Group time clocks were advanced to accommodate the passing of the millennium through December 31, 1999, into the year 2000 The live test determined whether the present computers, software, and equipment could accommodate the passing of the 21st century without incident and remain a viable support asset to the testing community. According to WSMR officials, the test appeared to be successful

Because the acid test is completed, WSMR can certify all of the range systems that were used in the test The certification will allow completion of all renovations by the September 1998 deadline

Electronic Proving Ground. The Electronic Proving Ground (EPG) is a directorate of WSMR, located at Fort Huachuca, Arizona Although the EPG business and test information systems have been assessed, the assessment took place after we completed the audit The initial review of EPG Y2K documentation confirmed problems with the existing documentation in the following areas

- test systems inventory,
- Y2K required written certification,
- testing process and procedures, and
- noncompliance with the WSMR Y2K guidance and procedures.

The EPG Commander acknowledged that the documents initially provided to the DoDIG audit team were not fully compliant with the DoD Year 2000 Management Plan and the Army Action Plan The WSMR Commanding General also

acknowledged the problems at EPG and took immediate action to resolve the issues by creating a Tiger Team to work out the necessary solutions to the problems

Since our departure, we received documentation from the WSMR Commanding General and the EPG Commander detailing the White Sands-EPG accomplishments in resolving the business and test information systems at EPG The EPG reported a total of 60 test systems (57 were compliant and 3 were noncompliant) to WSMR to update the database

Yuma Proving Ground. Yuma Proving Ground, located at Yuma, Arizona, has assessed its test systems and reported 44 systems (125 inventory items) were compliant and eight systems (17 inventory items) were noncompliant The personnel responsible are renovating or replacing the eight noncompliant systems Since our visit, three of the eight noncompliant systems have been fixed and certified as Y2K compliant. The Y2K project managers have prepared contingency plans for the five noncompliant systems

Yuma Proving Ground conducted an acid test in mid-September 1998 to certify that, under realistic operating conditions, Yuma's real time data system and range instrumentation system are 100 percent Y2K compliant We have not received the results as of October 14, 1998.

Conclusion. The Army is currently on schedule with renovating its business and test systems for Y2K compliance at the three major range and test facilities The ranges have developed their inventory, tested all their systems, developed contingency plans where necessary, and maintained all the necessary documentation. The ranges should complete the implementation phase by December 1998

Part II - Additional Information

Appendix A. Audit Process

This is one of a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor DoD efforts to address the Y2K computing challenge For a listing of audit projects addressing this issue, see the Y2K webpage on IGNET (http://www.ignet gov/)

Scope and Methodology

Work Performed. We concentrated on the preparation of the Army major range and test facilities automated information systems to resolve the Y2K computing problem. We randomly selected three major range and test facilities to review the Y2K compliance of business and test information programs with the DoD Management Plan

We reviewed and evaluated the progress of the Army major range and test facilities in resolving the Y2K computing issue We evaluated the Y2K efforts of Aberdeen Test Center; White Sands Missile Range, including the Electronic Proving Ground; and Yuma Proving Ground We compared their efforts with the goals described in the DoD Management Plan, issued by the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) in April 1997 We obtained documentation including the Army Materiel Command Year 2000 action plan, information on related Y2K contracts, the Army Y2K certification process, and various Y2K correspondence and reports. We did not review the management control program because DoD has acknowledged the Y2K computing problem as an area with material management control weaknesses in the FY 1997 annual statement of assurance and further reporting on those weaknesses would be redundant

DoD-wide Corporate Level Government Performance and Results Act Goals. In response to the Government Performance and Results Act, the Department of Defense has established 6 DoD-wide corporate level performance objectives and 14 goals for meeting these objectives The report pertains to achievement of the following objective and goal.

- **Objective:** Prepare now for the uncertain future
- **Goal:** Pursue a focused modernization effort that maintains U S qualitative superiority in key war fighting capabilities **(DoD-3)**

DoD Functional Area Reform Goals. Most major DoD functional areas have also established performance improvement reform objectives and goals. This report pertains to achievement for the following functional area objective and goal

Information Technology Management Functional Area.

- **Objective:** Provide services that satisfy customer information needs
- **Goal:** Upgrade technology base. **(ITM-2.3)** .

General Accounting Office High-Risk Area. In its identification of risk areas, the General Accounting Office has specifically designated risk in resolution of the Y2K problem as high This report provides coverage of that problem and of the overall Information Management and Technology high-risk area

Use of Computer-Processed Data. We did not use computer-processed data or statistical sampling procedures for this audit.

Audit Type, Dates, and Standards. We performed this economy and efficiency audit from May through July 1998, in accordance with the auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD

Contacts During the Audit. We visited or contacted individuals and organizations within the Department of the Army Further details are available on request

Summary of Prior Coverage

The General Accounting Office and the Inspector General, DoD, have conducted multiple reviews related to Y2K issues, although none have focused specifically on Air Force major range and test facilities General Accounting Office reports can be accessed over the Internet at http.//www.gao gov Inspector General, DoD, reports can be accessed over the Internet at http //www dodig osd.mil

Appendix B. Report Distribution

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  Year 2000 Oversight and Contingency Planning Office
Assistant Secretary of Defense (Public Affairs)

Department of the Army

Auditor General, Department of the Army
Army Materiel Command
Test and Evaluation Command
Aberdeen Test Center
White Sands Missile Range
Electronic Proving Ground
Yuma Proving Ground
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  Senate Committee on Governmental Affairs
  Senate Special Committee on the Year 2000 Technology Problem
  House Committee on Appropriations
  House Subcommittee on National Security, Committee on Appropriations
  House Committee on Government Reform and Oversight
  House Subcommittee on Government Management, Information, and Technology, Committee on Government Reform and Oversight
  House Subcommittee on National Security, International Affairs, and Criminal Justice, Committee on Government Reform and Oversight
  House Committee on National Security

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