Audit Report

YEAR 2000 COMPLIANCE OF SELECTED
AIR MOBILITY COMMAND SYSTEMS

Report No. 99-134 April 13, 1999

Office of the Inspector General
Department of Defense

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Acronyms

AMC	Air Mobility Command
AFASI	Air Force Automated System Inventory
C2IPS	Command and Control Information Processing System
GATES	Global Air Transportation Execution System
PACOM	U.S. Pacific Command
PMO	Program Management Office

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202-2884

April 13, 1999

MEMORANDUM FOR ASSISTANT SECRETARY OF DEFENSE (COMMAND, CONTROL, COMMUNICATIONS, AND INTELLIGENCE)
COMMANDER IN CHIEF, U.S. PACIFIC COMMAND
COMMANDER IN CHIEF, U.S. TRANSPORTATION COMMAND
ASSISTANT SECRETARY OF THE AIR FORCE (FINANCIAL MANAGEMENT AND COMPTROLLER)

SUBJECT: Audit Report on Year 2000 Compliance of Selected Air Mobility Command Systems (Report No. 99-134)

We are providing this report for information and use. This is one in 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 efforts addressing the year 2000 computing challenge.

Because this report contains no recommendations, no written comments were required, and none were received. Therefore, we are publishing this report in final form.

We appreciate the courtesies extended to the audit staff. For additional information on this report, please contact Ms. Judith I. Padgett, at (703) 604-9217 (DSN 664-9217) (jpadgett@dodig.osd.mil) or Mr. Wayne K. Million, at (703) 604-9312 (DSN 664-9312) (wmillion@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. 99-134 **April 13, 1999**
Project No. 9CC-0086.01

Year 2000 Compliance of Selected Air Mobility Command Systems

Executive Summary

Introduction. This is one in 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 efforts to address the year 2000 computing challenge. For a listing of audit projects addressing the issue, see the year 2000 webpage on the IGnet at www.ignet.gov.

Objectives. The overall audit objective was to assess the status of selected Military Department and Defense Agency mission-critical systems, identified by U.S. Pacific Command and U.S. Forces Korea as being of particular importance to them, in attaining compliance with year 2000 conversion requirements. Specifically, we reviewed the progress of each system towards year 2000 compliance, testing and integration of modifications, and contingency plans. For this report, we reviewed two Air Mobility Command managed systems, the Command and Control Information Processing System and the Global Air Transportation Execution System, operated within the U.S. Pacific Command area of responsibility.

Results. The Air Mobility Command program managers had taken the necessary actions to achieve year 2000 compliance for the Command and Control Information Processing System and the Global Air Transportation Execution System. The Air Mobility Command management implemented a certification process that ensured systems were verified and certified. The Air Mobility Command "Year 2000 Certification Process" guidance requires a comprehensive verification of the system testing, interfaces, and contingency documentation before receiving certification. The Vice-Commander, Air Mobility Command, certified the Command and Control Information Processing System as year 2000 compliant February 1, 1999. The Global Air Transportation Execution System, a system currently under development, was on schedule towards certification in April 1999. The Command and Control Information Processing System and Global Air Transportation Execution System managers reported and maintained the year 2000 status of their systems in the Air Force Automated Systems Inventory. Air Mobility Command certification actions minimized the risk of failure associated with year 2000 processing for the Command and Control Information Processing System and the Global Air Transportation Execution System.

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Background

The Executive Order, "Year 2000 Conversion," February 4, 1998, mandates that Federal agencies do what is necessary to ensure that no critical Federal program experiences disruption because of the year 2000 computing problem. The Executive Order also requires that the head of each agency ensure that efforts to address year 2000 issues receive the highest priority.

On August 7, 1998, the Secretary of Defense issued memorandum "Year 2000 Compliance," which defined the year 2000 computer problem as a critical national defense issues. The Secretary's memorandum also requires each of the Unified Commanders-in-Chief to report the status of year 2000 implementation within their commands and the command of subordinate components starting after October 1998.

U.S. Pacific Command. The U.S. Pacific Command (PACOM) is the largest of the nine unified commands in the Department of Defense. The PACOM area of responsibility includes 50 percent of the earth's surface and two-thirds of the world's population. It encompasses more than 100 million square miles, stretching from the west coast of North and South America to the east coast of Africa, and from the Arctic in the north to the Antarctic in the south. It also includes Alaska, Hawaii, and eight U.S. territories. The overall mission of PACOM is to promote peace, deter aggression, respond to crises, and, if necessary, fight and win to advance security and stability throughout the Asian-Pacific region.

The PACOM, headquartered at Camp Smith, Hawaii, is supported by Component commands from each Service: the U.S. Army Pacific Command, U.S. Pacific Fleet Command, U.S. Pacific Air Force Command, and Marine Forces Pacific Command. In addition, PACOM exercises combatant controls over four sub-unified commands within the Pacific region. The sub-unified commands are the U.S. Forces Japan, U.S. Forces Korea, Alaskan Command, and Special Operations Command Pacific.

Air Mobility Command. The Air Mobility Command (AMC) provides airlift, air refueling, special air mission, and aeromedical evacuation for U.S. forces. AMC also supplies forces to theater commands to support wartime tasking. As the Air Force constituent of the U.S. Transportation Command, AMC is the single manager for air mobility. AMC is headquartered at Scott Air Force Base, Illinois, and provides centralized command and control over air mobility operations. Among the systems that AMC manages are the Command and Control Information Processing System (C2IPS) and the Global Air Transportation Execution System (GATES). PACOM identified both of those systems as mission-critical. The two systems provide PACOM with air mobility support. C2IPS provides integrated command and control over air mobility operations worldwide. GATES provides a fully-integrated cargo and passenger transportation system used to direct air mobility operations.

Air Force Automated Systems Inventory. The Air Force Communications Agency developed the Air Force Automated Systems Inventory (AFASI) to

inventory all Air Force automated information systems and weapons systems. AFASI is an internet-accessible database. To access AFASI, a user must establish an account with the Air Force Communications Agency.

AFASI Uses. The Air Force uses AFASI to track-inventoried systems' progress toward year 2000 compliance and to update the Defense Integration Support Tools. All major commands and field operating agencies use AFASI to maintain their systems' year 2000 status. The AFASI is also used to report the status of the Air Force year 2000 effort to the Air Force Combat Intelligence Operations Center, Information Technology, who in turn reports to the Office of the Secretary of Defense.

AFASI Information. AMC maintained the year 2000 status for all its managed information systems, including C2IPS and GATES, in AFASI. AFASI provides all users with detailed information on Air Force information systems' year 2000 status. AFASI provides users information regarding system certification, the compliance phase completed, compliance costs, system interfaces, and interface agreements. AFASI also provides the user a system description, data on the system's hardware and software components, and the system's points of contact.

Objectives

The overall audit objective was to assess the status of selected Military Department and Defense Agency mission-critical systems, identified by U.S. Pacific Command and U.S. Forces Korea as being of particular importance to them, in attaining compliance with year 2000 conversion requirements. Specifically, we reviewed the progress of each system towards year 2000 compliance, testing and integration of modifications, and contingency plans. For this report, we reviewed two AMC-managed systems, C2IPS and GATES, operated within the PACOM area of responsibility. See Appendix A for a discussion of the audit process and prior coverage.

Year 2000 Status of Air Mobility Command Systems

The AMC program managers had taken the necessary actions to ensure C2IPS and GATES achieve year 2000 certification. AMC management implemented a certification process that verified and certified systems. AMC "Year 2000 Certification Process" guidance requires a comprehensive verification of the system testing, interfaces, and contingency documentation before certification. The Vice-Commander, AMC, certified C2IPS as year 2000 compliant February 1, 1999. GATES, a system currently under development, was on schedule for certification in April 1999. The C2IPS and GATES managers reported and maintained the year 2000 status of their systems in AFASI. AMC certification actions minimized the risk of failure associated with year 2000 processing for C2IPS and GATES.

Year 2000 Certification Process

To ensure continued operation in the year 2000 and beyond, each information system managed by AMC must be certified year 2000 compliant. To accomplish this objective, AMC implemented the "Year 2000 Certification Process," July 21, 1998. The AMC process implements DoD and Air Force year 2000 compliance requirements. The process provides AMC program managers a structure to independently verify compliance tests, contingency plans, system interfaces, and fielding plans in support of year 2000 certification. The program manager responsibilities include testing the system for year 2000 impacts and defining contingency and interface provisions.

Certification Package. The process requires the program manager to prepare a certification package after completing system compliance testing. The package contains the system's test plan, test report, contingency plan, interfaces design documentation, and system fielding plan. The program manager submits the package to the AMC Year 2000 Program Management Office (PMO) for independent verification.

Verification Process. The Year 2000 PMO independently verifies the package for completeness and sufficiency to determine whether the submitted documentation supports the system's certification. A commercial contractor verifies the AMC process to provide an independent assessment of the system's certification supporting documentation. After the PMO approves the system documentation, the PMO submits the package to the AMC Year 2000 Validation Board.

Validation Board. The program manager briefs the validation board on his actions to achieve system compliance. The board either recommends the system for certification or recommends actions to resolve before certification. The technical advisor to the AMC Communications and Information Directorate chairs the board. Upon recommendation from the board, the Vice-Commander, AMC, certifies the system as year 2000 compliant.

C2IPS Year 2000 Status

The C2IPS program manager had taken the necessary actions to ensure C2IPS achieved year 2000 certification. On February 1, 1999, the Vice-Commander, AMC, certified C2IPS as year 2000 compliant.

System Description. C2IPS provides integrated command and control over air mobility operations worldwide. PACOM identified C2IPS as a mission critical system to the their Air Force operations. C2IPS has been in use since July 1991.

Certification Package. The system testing was completed November 6, 1998. The C2IPS program manger submitted the system certification package to the Year 2000 PMO for review December 30, 1998. The C2IPS package included the system test plan, test report, contingency plan, validation board briefing, validation board action item responses, independent verification and validation report, and certification briefing. The C2IPS package documentation supported the system's year 2000 certification.

Year 2000 Testing. The MITRE Corporation, under contract with the Electronic System Command, verified the C2IPS version 2.0D ability to successfully process data containing dates with no impact to the end user. Specific dates tested included dates in the 20th and 21st centuries, dates crossing 1999 and 2000, and leap year dates. During August through November 1998, AMC System Integration Testing Facility tested functional and interfaces C2IPS processing. The C2IPS test results supported successful year 2000 processing.

Contingency Plan. The C2IPS program manager prepared a combined programmatic and system contingency management plan, December 31, 1998. The program manager properly identified year 2000 risk contingencies and provided preparatory, execution, and recovery actions to minimize the impact of year 2000-related disruption. The plan included the probability and the consequences of the identified year 2000-related risks upon C2IPS. It described specific actions functional users, the operations manager, system managers, system administrators, database administrators, and help desk personnel would take to minimize potential year 2000 interruptions or failures to C2IPS operations.

System Interfaces. The C2IPS program manager obtained interface agreements with information systems that communicate with C2IPS. The C2IPS program manager prepared an interface design document that defined year 2000 date-related data exchanges for each C2IPS interface system sending and receiving information. The C2IPS program manager updated the interface design document as needed and each interfacing system program director or manager signed an agreement document.

Independent Assessment. LOGICON Incorporated, under contract with AMC, independently assessed the C2IPS year 2000-certification package January 21, 1999. The LOGICON Incorporated assessment concluded that C2IPS

certification documentation complied with Air Force and AMC year 2000 requirements. The objectives of that assessment included the following determinations.

- The contingency plan described the program manager actions to fix the system in case of year 2000 problems.
- The program manager obtained interface agreements and the agreements address date-related data exchange issues.
- The system's year 2000 tests were successfully completed.

GATES Year 2000 Status

The GATES program manager started the process necessary to ensure GATES achieves year 2000 certification. GATES, a system currently under development, was on schedule for certification in April 1999. The program manager prepared the contingency, the year 2000 test, and the fielding plans. The program manager also obtained system interface agreements. GATES system testing took place until March 8, 1999. The GATES program manager began the AMC year 2000 certification process March 18, 1999, and planned to complete it by April 24, 1999.

System Description. AMC manages and maintains GATES for the user. GATES provides the user a fully integrated cargo and passenger transportation system used to direct air mobility operations. AMC developed GATES to be year 2000 compliant. The system was procured through the Defense Information Systems Agency's Defense Enterprise Integration Services contracts. The contracts require the contractor to guarantee the system software year 2000 compatibility. Because AMC is fielding GATES before 2000, the system must be verified and certified compliant. In June 1999, GATES is scheduled to replace the Consolidated Aerial Port Systems II, which is an AMC year 2000-certified system. GATES provides more performance, reliability, and maintainability features than the currently used cargo and passenger transportation system.

Contingency Plan. The GATES program manager prepared a programmatic contingency plan and disaster recovery plan for the GATES central site. In the programmatic contingency plan, the program manager identified year 2000 risk contingencies and provided preparatory, execution, and recovery actions to minimize the impact of year 2000-related disruption. The plan described specific actions functional users, the operations manager, system manager, system administrators, database administrators, and help desk personnel would take to minimize potential year 2000 interruptions or failures to GATES operations. However, the plan did not identify the probabilities and the consequences of the identified year 2000-related risks on GATES operations. We recommended plan revisions to include a risk impact analysis of year 2000 identified risks on GATES operations. GATES program management agreed with our recommendation and revised their programmatic contingency plan.

System Fielding. As of October 1998, the GATES program offices completed GATES site surveys and started site hardware installations at aerial ports located within PACOM. The Materiel Fielding Plan, October 26, 1998, scheduled GATES hardware installations at the following aerial ports:

Location	Installation Date (Start date)
Hickam, Hawaii	November 30, 1998
Kadena, Korea	December 7, 1998
Osan, Korea	November 9, 1998
Yokota, Japan	November 30, 1998

The Plan also scheduled the following GATES operational transition within the PACOM area of operations.

Location	Operational Transition Dates
Hickam, Hawaii	June 13, 1999
Kadena, Korea	June 13, 1999
Osan, Korea	June 13, 1999
Yokota, Japan	June 13, 1999

Year 2000 Testing. The GATES program office conducted system testing between May 1998 and February 1999. The GATES software test plan, dated July 31, 1998, included the following year 2000 test objectives to ensure compliance: date rollover, leap year, century dates, date computation, and date transfer tests. The plan also requires system interoperability testing to ensure the system's ability to interface with other systems.

System Interfaces. The GATES program office defined interface and data exchange issues and prepared interface design documents for each GATES interface system. The interface design document provides the technical aspects and specifies the message-level electronic data interchange among the systems that interface with GATES. The GATES program office obtained written interface agreements with 16 systems that interface with GATES.

Conclusion

AMC complied with DoD and Air Force guidance in processing the C2IPS and GATES systems' year 2000 certification. The C2IPS program manager followed the procedures and prepared supporting documentation to achieve C2IPS year 2000 certification. On February 1, 1999, the Vice-Commander, AMC, certified C2IPS as year 2000 compliant. The GATES program manager started the process necessary to achieve GATES year 2000 certification by April 24, 1999. The improvements we suggested to the GATES program office regarding their contingency plan were promptly incorporated; therefore, we have no recommendations.

Appendix A. Audit Process

This is one in 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 year 2000 computing challenge. For a listing of audit projects addressing this issue, see the year 2000 web page on the IGnet at www.ignet.gov.

Scope

We reviewed and assessed the year 2000 compliance status of the AMC Command and Control Information Processing System and Global Air Transportation Execution System. PACOM identified both of those systems as critical systems to their mission. We interviewed AMC program officials and reviewed interface design documents, test plans, test reports, system fielding reports, contingency plans, and AMC's certification process to obtain year 2000 compliance status of the systems.

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 the objectives. This report pertains to achievement of the following objective and goal.

- **Objective:** Prepare now for an 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 of the following functional area objectives and goals.

- **Information Technology Management Functional Area.**
  Objective: Become a mission partner.
  Goal: Serve mission information users as customers. **(ITM-1.2)**
- **Information Technology Management Functional Area.**
  Objective: Provide services that satisfy customer information needs.
  Goal: Modernize and integrate DoD information infrastructure. **(ITM-2.2)**
- **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 year 2000 problem as high. This report provides coverage of that problem and of the overall Information Management and Technology high-risk area.

Methodology

Audit Type, Dates, and Standards. We performed this program audit from December 1998 to February 1999, in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD. We did not use computer-processed data to perform this audit.

Contacts During the Audit. We visited or contacted individuals and organizations within DoD. Further details are available upon request.

Management Control Program. We did not review the management control program related to the overall audit objective because DoD recognized the year 2000 issue as a material management control weakness area in the FY 1997 Annual Statement of Assurance.

Summary of Prior Coverage

The General Accounting Office and the Inspector General, DoD, have conducted multiple reviews related to year 2000 issues. General Accounting Office reports can be reviewed on the Internet at www.gao.gov. Inspector General, DoD, reports can be reviewed on the internet at www.dodig.osd.mil.

Appendix B. Report Distribution

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Commander in Chief, U.S. Atlantic Command
Commander in Chief, U.S. Central Command
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  Inspector General, Defense Information Systems Agency
  United Kingdom Liaison Officer, Defense Information Systems Agency
Director, National Security Agency
  Inspector General, National Security Agency
Inspector General, Defense Intelligence Agency
Inspector General, National Imagery and Mapping Agency
Inspector General, National Reconnaissance Office

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  Office of Information and Regulatory Affairs
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Senate Committee on Appropriations
Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Governmental Affairs
Senate Special Committee on the Year 2000 Technology Problem
House Committee on Appropriations
House Committee on Armed Services
House Subcommittee on National Security, Committee on Appropriations
House Committee on Government Reform
House Subcommittee on Government Management, Information, and Technology, Committee on Government Reform
House Subcommittee on National Security, Veterans Affairs, and International Relations, Committee on Government Reform
House Subcommittee on Technology, Committee on Science

Audit Team Members

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