

**A**udit

**R**eport



**DISTRIBUTION STATEMENT A**  
Approved for Public Release  
Distribution Unlimited

YEAR 2000 CONVERSION OF LOGISTICS AND  
MAINTENANCE SYSTEMS IN SUPPORT OF THE  
AIRBORNE WARNING AND CONTROL SYSTEM

Report No. 99-052

December 11, 1998

Office of the Inspector General  
Department of Defense

DTIC QUALITY INSPECTED 4

19990907 157

AOI 99-12-2213

## INTERNET DOCUMENT INFORMATION FORM

**A . Report Title: Year 2000 Conversion of Logistics and Maintenance Systems in Support of the Airborne Warning and Control System**

**B. DATE Report Downloaded From the Internet: 09/07/99**

**C. Report's Point of Contact: (Name, Organization, Address, Office Symbol, & Ph #):**  
OAIG-AUD (ATTN: AFTS Audit Suggestions)  
Inspector General, Department of Defense  
400 Army Navy Drive (Room 801)  
Arlington, VA 22202-2884

**D. Currently Applicable Classification Level: Unclassified**

**E. Distribution Statement A: Approved for Public Release**

**F. The foregoing information was compiled and provided by:**  
DTIC-OCA, Initials: \_\_VM\_\_ Preparation Date 09/07/99

The foregoing information should exactly correspond to the Title, Report Number, and the Date on the accompanying report document. If there are mismatches, or other questions, contact the above OCA Representative for resolution.

### **Additional Copies**

To obtain additional copies of this audit report, contact the Secondary Reports Distribution Unit of the Analysis, Planning, and Technical Support Directorate at (703) 604-8937 (DSN 664-8937) or FAX (703) 604-8932 or visit the Inspector General, DoD, Home Page at: [www.dodig.osd.mil](http://www.dodig.osd.mil)

### **Suggestions for Future Audits**

To suggest ideas for or to request future audits, contact the Planning and Coordination Branch of the Analysis, Planning, and Technical Support Directorate at (703) 604-8908 (DSN 664-8908) or FAX (703) 604-8932. Ideas and requests can also be mailed to

OAIG-AUD (ATTN: APTS Audit Suggestions)  
Inspector General, Department of Defense  
400 Army Navy Drive (Room 801)  
Arlington, Virginia 22202-2884

### **Defense Hotline**

To report fraud, waste, or abuse, contact the Defense Hotline by calling (800) 424-9098, by sending an electronic message to [Hotline@DODIG.OSD.MIL](mailto:Hotline@DODIG.OSD.MIL), or by writing to the Defense Hotline, The Pentagon, Washington, D.C. 20301-1900. The identity of each writer and caller is fully protected.

### **Acronyms**

AFMC	Air Force Materiel Command
ALC	Air Logistics Center
AWACS	Airborne Warning and Control System
Y2K	Year 2000



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

December 11, 1998

MEMORANDUM FOR ASSISTANT SECRETARY OF THE AIR FORCE  
(FINANCIAL MANAGEMENT AND COMPTROLLER)

SUBJECT. Audit Report on Year 2000 Conversion of Logistics and Maintenance  
Systems in Support of the Airborne Warning and Control System  
(Report No 99-052)

We are providing this audit report for review and comment. The Air Force did not respond to the draft report. DoD Directive 7650.3 requires that all recommendations be resolved promptly. Therefore, the Air Force should submit comments by January 11, 1999.

We appreciate the courtesies extended to the audit staff. Questions on the audit should be directed to Mr. John A. Gannon at (703) 604-9179 (DSN 664-9179), email [jgannon@dodig.osd.mil](mailto:jgannon@dodig.osd.mil) or Mr. Joseph M. Austin at (703) 604-9178 (DSN 664-9178), email [jaustin@dodig.osd.mil](mailto:jaustin@dodig.osd.mil). See Appendix C for the report distribution. The audit team members are listed inside the back cover.

A handwritten signature in black ink, reading "Robert J. Lieberman", is positioned above the typed name.

Robert J. Lieberman  
Assistant Inspector General  
for Auditing

**Office of the Inspector General, DoD**

**Report No. 99-052**  
(Project No. 8AS-0032 01)

**December 11, 1998**

**Year 2000 Conversion of Logistics and Maintenance Systems  
in Support of the Airborne Warning and Control System**

**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 DoD 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 <http://www.ignet.gov>

The E-3 Airborne Warning and Control System provides all-weather surveillance and command and control functions to commanders of U.S. tactical and air defense forces. There are 32 U.S. Airborne Warning and Control Systems located throughout the world. In Inspector General, DoD, Report No. 99-017, "Year 2000 Conversion of the Airborne Warning and Control System," October 19, 1998, we concluded that the program office was addressing year 2000 issues under its purview and the Airborne Warning and Control System mission should not be disrupted, provided that infrastructure and logistics support systems are year 2000 capable.

**Audit Objectives.** The overall audit objective was to determine whether planning and management were adequate to ensure that mission critical logistics and maintenance systems supporting the Airborne Warning and Control System would not be unduly disrupted by year 2000-related issues. Our audit focused on actions taken to resolve data processing issues regarding year 2000, as well as preparation of plans to prevent year 2000-related system failures that could affect the ability of the Airborne Warning and Control System to perform its mission. We also evaluated logistics and maintenance systems that support weapon systems other than the Airborne Warning and Control System.

**Audit Results.** The Air Force Materiel Command established a year 2000 program and took positive actions to address and resolve its year 2000 problems. However, the

Oklahoma City and San Antonio Air Logistics Centers lacked documentation supporting contingency plans, test plans and test results, certifications and year 2000 progress reported. Unless the air logistics centers make further progress in documenting the year 2000 status reported, the Airborne Warning and Control System and possibly other weapon systems face a potential risk that year 2000-related disruptions in computer operations will impair their mission capabilities. See Part I for details on the audit results.

**Summary of Recommendations** We recommend that the Commanders, Oklahoma City and San Antonio Air Logistics Centers direct systems managers to prepare and make available documentation to certify that logistics and maintenance systems are year 2000 compliant.

**Management Comments** A draft of this report was issued on October 30, 1998. The Air Force did not respond to the draft report. We request that the Commanders, Oklahoma City and San Antonio Air Logistics Centers provide written comments on the final report by January 11, 1999.

# **Table of Contents**

---

<b>Executive Summary</b>	<b>i</b>
--------------------------	----------

## **Part I - Audit Results**

Background	2
Objectives	4
Year 2000 Status of Logistics and Maintenance Systems that Support the Airborne Warning and Control System	5
Other Systems	12

## **Part II - Additional Information**

Appendix A Audit Process	
Scope	16
Methodology	17
Summary of Prior Coverage	18
Appendix B Other Systems	20
Appendix C Report Distribution	22

## **Part I - Audit Results**

---

## Background

**Airborne Warning and Control System.** The E-3 Airborne Warning and Control System (AWACS) provides all-weather surveillance and command and control functions to commanders of U S tactical and air defense forces. The basic E-3 air vehicle, which has been in service since 1977, is a militarized version of the Boeing 707 commercial jetliner. There are 32 U.S. AWACS located throughout the world. In addition, the North Atlantic Treaty Organization and several foreign countries own and operate AWACS to support their missions. The U.S. AWACS uses surveillance radar, identification friend or foe interrogator, datalink systems, voice communications, and electronics support measures to complete its missions.

Inspector General, DoD, Report No. 99-017, "Year 2000 Conversion of the Airborne Warning and Control System," October 19, 1998, is the first of three reports related to the AWACS. The report stated that the AWACS program office took an aggressive and proactive approach to address the issues under its purview and ensure that continuity of operations is not unduly disrupted by year 2000-related issues. Program office managers successfully planned, executed, and coordinated their year 2000 (Y2K) efforts with key organizations that support the AWACS to ensure a smooth transition into Y2K. As a result, the AWACS missions should not be disrupted by Y2K-related issues provided the AWACS infrastructure and logistics support systems are Y2K compliant.

**Year 2000 Problem.** Because of the potential failure of computers to run or function throughout the Government, the President issued an Executive Order, "Year 2000 Conversion," February 4, 1998, making it policy that Federal agencies ensure that no critical Federal program experiences disruption because of the Y2K problem and that the head of each agency ensure that efforts to address the Y2K problem receive the highest priority attention in the agency.

**DoD Y2K Management Strategy.** In an August 7, 1998, memorandum, "Year 2000 Compliance," the Secretary of Defense expressed concern that DoD was making insufficient progress in its efforts to solve its Y2K computer problem. The Chairman, Joint Chiefs of Staff was tasked to develop a joint Y2K operational evaluation program to test systems such as the Airborne Warning and Control System. The memorandum also reiterated that the Military Departments and Defense agencies were responsible for ensuring that the

---

mission-critical systems under their respective purview were accurately reported in the DoD Y2K database. The Secretary required each Military Department to report on the status of every major weapon system by October 1, 1998

In an August 24, 1998, memorandum, "Year 2000 (Y2K) Verification of National Security Capabilities," the Deputy Secretary of Defense stated that each principal staff assistant within the Office of the Secretary of Defense must verify that all functions under his or her purview will continue unaffected by Y2K issues and provide a plan for end-to-end testing by November 1, 1998. The principal staff assistant for logistics and infrastructure systems is the Under Secretary of Defense for Acquisition and Technology. The memorandum also stated that the Chief of Staff of the Army, the Chief of Naval Operations, the Chief of Staff of the Air Force, the Commandant of the Marine Corps, and the Directors of the Defense agencies must certify that they have tested the information technology and national security system Y2K capabilities of their respective Component's systems, in accordance with the DoD Management Plan, by November 1, 1998

**Air Force Y2K Management Strategy.** The Air Force has adopted the DoD management strategy and guidance for inventorying, prioritizing, fixing, and retiring systems and for monitoring progress. In November 1996, the Air Force published, "Year 2000 Guidance Package," which designated the Air Force Communications Agency as the focal point for coordinating Y2K efforts

**Air Force Materiel Command.** The Air Force Materiel Command (AFMC) is the largest command within the Air Force and is responsible for researching, developing, testing, acquiring, delivering, and logistically supporting every Air Force weapon system. The AFMC manages the five air logistics centers (ALCs) that service and overhaul weapon systems such as, aircraft and missiles. Additionally, the AFMC issues policies and procedures for the daily operations of the ALCs

**Air Logistics Centers.** The Oklahoma City and San Antonio ALCs are responsible for the maintenance and overhaul of a variety of aircraft, missiles, and munitions, including the logistics and maintenance systems in support of the AWACS aircraft. Specifically, the Oklahoma City ALC is responsible for the repair and overhaul of the AWACS and the TF33 engine used on the AWACS. The San Antonio ALC is responsible for the Air Force automated test, precision measuring, and aircraft ground equipment in support of various aircraft

---

## Objectives

The overall audit objective was to determine whether planning and management were adequate to ensure that mission critical logistics and maintenance systems supporting the AWACS would not be unduly disrupted by Y2K-related issues. Our audit focused on actions taken to resolve data processing issues regarding Y2K, as well as preparation of plans to prevent Y2K-related system failures that could affect the ability of the AWACS to perform its mission. We also evaluated logistics and maintenance systems that support weapon systems other than AWACS. We did not have the opportunity to review the Air Force report on the Airborne Warning and Control System that was required in October 1998. See Appendix A for a discussion of the audit scope and methodology and for a summary of prior coverage. See Appendix B for a discussion of logistics and maintenance systems that support weapon systems other than AWACS.

---

## **Y2K Status of Logistics and Maintenance Systems that Support AWACS**

The AFMC established a Y2K corrective program and took positive actions to address and resolve its Y2K problem. However, the Oklahoma City and San Antonio ALCs did not always prepare documented contingency plans, test plans and test results, and certifications to support the Y2K progress reported. The situation occurred because the ALCs did not effectively monitor the accuracy of the status of progress reported by the system managers. Unless the ALCs make further progress ensuring the accuracy of Y2K status reported, the AWACS and possibly other weapon systems face increased risk that Y2K-related disruptions in computer operations will impair their mission capabilities.

### **Management of the AFMC Y2K Program**

Senior AFMC management has taken numerous positive actions to address Y2K problems and has reinforced the importance of the AFMC Y2K program throughout the command. Actions taken include establishing an AFMC Y2K program management office, assigning a Y2K program manager to serve as the Y2K focal point for AFMC, and preparing and issuing a Y2K management plan.

**Program Management Office.** The AFMC Deputy Commanding General established the AFMC Y2K program management office in August 1997, to manage the Y2K initiative of AFMC. Among other things, the AFMC Y2K program management office

- coordinates and synchronizes Y2K efforts throughout the command, including field offices,
- manages the process to collect, analyze, consolidate and disseminate Y2K information, policy, procedures, lessons learned, and best practices to the field,

## Y2K Status of Logistics and Maintenance Systems that Support AWACS

- ensures the integration and reporting of data collected, and
- prepares and disseminates the AFMC Y2K Management Plan

**Program Management Plan.** The AFMC Y2K program management office issued the AFMC Y2K Management Plan in October 1997, to implement the Y2K management strategy that requires centralized policy and decentralized implementation. The strategy allows AFMC managers the flexibility to implement Y2K solutions, as deemed appropriate, while benefiting from AFMC best practices. In addition to the Management Plan, AFMC issued several policy memorandums for implementing the plan.

The AFMC Y2K Management Plan, version 6, July 24, 1998, provides the AFMC and its five ALCs with the corporate strategy and management approach to be used in addressing the Y2K problem. Because the plan uses the accelerated target completion dates for the renovation, validation, and implementation phases, all Air Force Y2K efforts should be completed December 31, 1998.

The Air Force requires that a general officer or a member of the senior executive service sign each certification of compliance. The AFMC Y2K Management Plan also

- describes the roles and responsibilities of personnel at the program (system or single) manager level. Those individuals are responsible for determining the critical nature of the software and the systems they use to accomplish their mission,
- emphasizes the need for management awareness and involvement in developing and executing the AFMC Y2K strategy,
- addresses the expanded roles of senior management in the execution of AFMC Y2K strategy, especially the process of certifying that systems are Y2K compliant. The certification process requires that a certification tracking document and a compliance checklist that outlines the steps and logic necessary to ensure the systems and their interfaces have been tested for Y2K compliance be established, completed, and signed for each system to ensure that all necessary actions are being taken and that required documentation is being prepared.

## **Documentation of Y2K Related Actions**

The Oklahoma City and San Antonio ALCs did not always document contingency plans, test plans and test results, interface agreements, and certification documents to support the Y2K progress reported. The situation occurred because the ALCs did not effectively monitor the status of progress reported by the system managers.

At the Oklahoma City and San Antonio ALCs, we reviewed nine logistics and maintenance systems that were used to support AWACS. The nine systems were considered mission critical (criticality I) or mission essential (criticality II). Mission critical systems are of such importance that the loss of those critical functions would cause immediate stoppage of direct mission support of wartime operations. The loss of mission essential systems would reduce operational capability because of a loss of equipment or parts. If not corrected, degradation would eventually cause a loss of mission capability. For each of the nine systems we reviewed, at least one of the required documents was not available for review as of August 1998. The systems lacked contingency plans, test plans, test results, interface agreements, or certification documents or a combination of the five. The following table summarizes the results of our review.

## Y2K Status of Logistics and Maintenance Systems that Support AWACS

### Logistics and Maintenance Systems That Support AWACS (as of August 1998)

#### Required Documents

<u>System</u>	<u>Contingency Plan</u>	<u>Test Plan</u>	<u>Test Results</u>	<u>Certified Y2K Compliant</u>
Automatic Transmitter Test Set	Incomplete*	No	Yes	Yes
Avionics Software Development System	No	No	No	No
Benchtop Reconfigurable Automatic Tester 101	Incomplete	No	Yes	No
Benchtop Reconfigurable Automatic Tester 105	Incomplete	No	Yes	Yes
Computer Logic Unit Test Set	Incomplete	No	Yes	Yes
Electronic Equipment Test Station	Incomplete	No	Yes	No
Electronic Circuit Plug-In Unit Test Set	Incomplete	No	Yes	Yes
Intermediate Frequency-Video Microwave Avionics Depot Test Set	Incomplete	No	Yes	No
Military Strategic & Tactical Relay Satellite Test Set	Incomplete	No	Yes	No

\*Technical orders providing user workarounds are not prepared

**Contingency Plan.** The San Antonio and Oklahoma ALCs did not prepare adequate contingency plans to ensure that weapon systems missions are not disrupted in the event of system failures resulting from Y2K problems

The AFMC Y2K Management Plan states that the system manager is responsible for Y2K compliance as part of that role in system acquisition and is required to write a separate contingency plan for those unique systems or applications that may not be corrected, as outlined in the DoD Management Plan. The contingency plan must state the risks and recommend workaround alternatives that are available to the using command. It must also list the developer and maintainer organization resources and activities necessary to recover from unexpected failures. Contingency plans are required for all mission critical and mission essential systems. The AFMC was in the process of developing a contingency plan strategy for managed systems, supporting systems, and continuity of operations. The contingency plan provides assurance that there will be no disruption in a mission accomplishment should a system fail.

The San Antonio ALC is responsible for about 470 (90 percent of all) automated test equipment systems used within the Air Force. Those systems support the various Air Force weapon systems. The Aerospace Equipment Management Directorate at the San Antonio ALC is responsible for 400 of the 470 systems. One contingency plan was developed to cover the 400 systems, although different automated test equipment systems are used to support different weapon systems. The same contingency plan covered eight of the nine logistics and maintenance systems used to support AWACS. The plan refers the system user to an Internet web site to resolve Y2K issues. However, as of August 1998, the Internet web site did not contain the technical orders which provide the Y2K user workarounds for each automated test equipment system in the event of system problem or failure. Furthermore, the San Antonio ALC project managers did not anticipate updates of technical orders being posted on the Internet until July 1999. Contingency plans for systems at the San Antonio ALC need to be completed and made more precise, especially because its logistics and maintenance functions are scheduled to be transferred to other ALCs as a result of the 1995 base realignment and closure.

As of August 1998, the Oklahoma City ALC had not developed a contingency plan for the avionics software development system, although the system was considered mission critical. This mission critical system provides software developers the capability to make changes to weapon system computer programs, add new capabilities, add enhancements, and correct latent deficiencies. In addition to

## Y2K Status of Logistics and Maintenance Systems that Support AWACS

supporting the AWACS, the system is used to support the B-1B, B-52, and missile weapon systems. A contingency plan needs to be developed to ensure that weapon systems missions are not disrupted in the event of system failures resulting from Y2K problems. Such plans were supposed to have been developed during the assessment phase of the Y2K conversion effort.

**Test Plans and Test Results.** Personnel at the Oklahoma City and San Antonio ALCs did not document test plans in certification packages for the nine logistics and maintenance systems we reviewed.

The AFMC Y2K Management Plan states that test plans for each system either must be developed or existing plans modified to include the establishment of test cases or scenarios that incorporate date algorithms. The test plan should provide details on the specific methodology used to conduct the tests. System managers should review the system test plans to ensure the completeness of testing methodology and that sufficient resources are provided to meet testing deadlines.

For the nine logistics and maintenance systems, documents showing only the test results were available, but plans detailing the tests were not on file at the time of our review. Specifically, at the San Antonio ALC, detailed test plans were not available for the eight systems. At the Oklahoma City ALC, a detailed test plan was not on file for the logistics system. Without the test plans and test results, there is no assurance that the required tests were properly conducted to ensure that the systems are Y2K compliant.

**Interface Agreements.** The Oklahoma ALC had not prepared interface agreements for the avionics software development system.

AFMC Y2K Management Plan states that system managers and maintainers must ensure that interfacing systems are Y2K compliant and documented in a memorandum of agreement or an interface control document. Interface agreements are required for mission critical systems, systems whose failure create a life-threatening situation, and mission essential systems.

Of the nine systems reviewed at the Oklahoma City and the San Antonio ALCs, only the avionics software development system at the Oklahoma City ALC required interface agreements. As of August 1998, interface agreements had not been prepared. We could not determine how many systems the avionics software development system interfaced with. The eight systems at the San Antonio ALC were stand-alone systems that did not interface with other systems. Data

exchanges between interfacing data systems are critical in the Y2K effort because incorrect data exchanges could potentially introduce or generate errors from one organization or data system to another

**Y2K Certification Documents.** At the Oklahoma City and San Antonio ALCs, documentation to support certification efforts were not on file

The AFMC Y2K Management Plan, July 24, 1998, version 6.1, page 16, section 3.3, paragraph 3.3.3 states that each phase of the certification process must be documented to support Y2K compliant certification. In addition, the Management Plan established a detailed certification process that requires system managers and certification officials to attest that all required actions have been taken before proceeding to the next phase of the Y2K process. At a minimum, a trained certifier must sign the Y2K compliance checklist (compliance certification signature page) for all weapon systems following the AFMC certification process. The system manager will then verify that the system has been certified.

For the eight maintenance systems we reviewed at the San Antonio ALC, the individual certifying that the systems were Y2K compliant did not review complete packages, which were to include contingency plans, test plans and results. The systems certifier based the system certification on test results and verbal assurances of system engineers that systems were Y2K compliant. A review of documentation supporting system certification was not part of the process. As of August 1998, a compliance checklist of the avionics software development system at the Oklahoma City ALC had not been prepared.

### **Monitoring Status of Systems**

The AFMC did not have a process in place for monitoring the accuracy of the status of systems being reported and had identified the lack of accurate information as a major concern. The lack of adequate oversight of status being reported by system managers contributed to the lack of adequate documentation to support actions taken to resolve Y2K issues. For example, the Oklahoma City and the San Antonio ALCs did not have a mechanism in place to ensure that all required documents were prepared prior to certifying that systems were Y2K compliant. Personnel responsible for certifying that systems were Y2K compliant relied on the assurances of system engineers that systems were Y2K compliant, rather than on the required documentation.

## Y2K Status of Logistics and Maintenance Systems that Support AWACS

AFMC and the San Antonio ALC management made a decision to report automated test equipment systems as subsystems of weapon systems. However, according to Air Force guidance, automated test equipment systems are part of infrastructure and should be reported as such. Infrastructure systems have different reporting requirements. The reporting of automated test systems as subsystems of weapon systems caused the reporting to be delayed and resulted in required documentation not being prepared. The decision to report automated test equipment systems as part of weapon systems was made in January 1998, the time when systems already should have been in the renovation phases.

### **Other Systems**

In our review of logistics and maintenance systems that supported AWACS, we also reviewed an additional 18 logistics and maintenance systems that supported other weapon systems. Of the 18 systems, 12 were locally managed systems at the Oklahoma City ALC. The remaining six systems were managed at the San Antonio ALC. The 18 systems exhibited problems that were similar to those we identified with AWACS-related systems. Adequate documentation was not on file to support decisions regarding making the systems Y2K compliant. Those systems are discussed in detail in Appendix B.

### **Summary**

The AFMC established a Y2K program and took positive actions to address and resolve its Y2K problem. However, the Oklahoma City and San Antonio ALCs had not enforced the AFMC requirement that Y2K conversion progress reports be backed up with documentation. The ALCs had not sufficiently monitored the status of progress reported by system managers and there were gaps and flaws in the conversion effort. Unless the Oklahoma City and San Antonio ALCs can support their determination of Y2K status, the Air Force faces the potential risk that Y2K related disruptions will impair their mission capabilities of the AWACS and possibly other weapon systems.

## **Recommendation for Corrective Actions**

We recommend that the Commanders, Oklahoma City and San Antonio Air Logistics Centers direct system managers to prepare and make available documentation to certify that logistics and maintenance systems are year 2000 compliant. Specifically, the system managers should prepare contingency plans, test plans, test results, and interface agreements before certifying that a system is year 2000 compliant. They should also prepare a certification tracking document and a certification checklist to ensure that the necessary documents are prepared.

## **Management Comments Required**

The Air Force did not comment on a draft of this report. We request that the Commanders, Oklahoma City and San Antonio Air Logistics Centers provide comments on the final report by January 11, 1999.

**This Page Intentionally  
Left Blank**

## **Part II - Additional Information**

---

## 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 Y2K computing challenge. For coverage of Air Force Y2K conversion efforts, we are coordinating closely with the General Accounting Office, Air Force Audit Agency, and Air Force Inspector General.

### Scope

We reviewed efforts taken by Headquarters, Air Force Materiel Command and the Oklahoma City and San Antonio ALCs to ensure that operations of the AWACS would not be unduly disrupted by Y2K problems. We interviewed key personnel from organizations that were responsible for centrally and locally managed logistics and maintenance systems that support AWACS. We obtained and reviewed DoD and Air Force policy and guidance on Y2K program management and reporting. We evaluated 9 logistics and maintenance systems that supported AWACS and 18 systems that supported other weapon systems. We determined whether adequate progress was being made to make the systems Y2K compliant. For each system, we reviewed certification documents, contingency plans, interface agreements, test plans and test results, and other pertinent documents. In addition, we reviewed the DoD and the AFMC Y2K Management Plans. Data reviewed were current as of August 1998. We did not have the opportunity to review any reporting made by the Air Force pursuant to DoD guidance issued in August 1998 and relevant to the AWACS.

**DoD-Wide Corporate Level Goals.** In response to the Government Performance and Results Act, the Air Force 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 United States 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 Defense 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)

**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.

## Methodology

We performed the audit at Headquarters, AFMC and the Oklahoma City and San Antonio ALCs to ensure that automated test systems supporting AWACS would not be disrupted by Y2K problems. We interviewed personnel from organizations that supported the AWACS. We obtained and reviewed applicable DoD and Air Force policy regarding the implementation of the DoD Y2K management plan. We also reviewed certification documents, contingency plans, interface agreements, program management plans, test plans and test results, and other pertinent documents.

**Audit Type, Dates, and Standards.** We performed this economy and efficiency audit at AFMC from May through August 1998 in accordance with

## **Appendix A. Audit Process**

---

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 for 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 Y2K 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 Y2K issues. 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>. The following reports address issues that are discussed in this report.

### **General Accounting Office**

General Accounting Office Report No. GAO/AIMD-98-35 (OSD Case No. 1484), "Defense Computers - Air Force Needs to Strengthen Year 2000 Oversight," January 16, 1998.

### **Inspector General, DoD**

Inspector General, DoD, Report No. 99-017, "Year 2000 Conversion of the Airborne Warning and Control System," October 19, 1998.

Inspector General, DoD, Report No. 98-147, "Year 2000 Certification of Mission-Critical DoD Information Technology Systems," June 5, 1998, stated that the DoD Components were not complying with Y2K certification criteria before reporting systems as compliant. Of the 430 systems that the DoD reported as Y2K compliant in November 1997, the report estimated that DoD components certified only 109 (25.3 percent) systems as Y2K compliant. As a result, DoD management reported systems that have not been certified as Y2K compliant. More important,

mission-critical DoD information technology systems may unexpectedly fail because they were classified as Y2K compliant without adequate basis. The results were based on a randomly selected sample of 87 systems that DoD had reported as Y2K compliant. That sample did not include any of the AWACS support systems discussed in this report.

---

## Appendix B. Other Systems

In addition to reviewing logistics and maintenance systems that supported AWACS at the Oklahoma City and San Antonio ALCs, we also reviewed 18 logistics and maintenance systems that supported other weapon systems. Of the 18 systems 12 were locally managed systems at the Oklahoma City ALC. The remaining six systems were managed at the San Antonio ALC. The 18 systems exhibited problems that were similar to those we identified with AWACS-related systems. Adequate documentation was not on file to support decisions regarding progress made toward making the systems Y2K compliant.

**Oklahoma City.** For the 12 locally managed logistics and maintenance systems we reviewed at the Oklahoma City ALC, only 4 were considered critical and required contingency plans. However, two of the four systems requiring contingency plans did not have contingency plans on file. Although test results were on file for those same two systems, no test plans were on file. Only 1 of the 12 locally managed systems required interface agreements, Logistics Management Database (DO75). It has about 90 interfaces, however, some of the interface agreements did not contain information pertinent to the Y2K issue, such as descriptions of interfaces, interface strategy for other systems sending and receiving data, and milestone dates for analyzing, programming, testing, joint testing, and implementing. Most of the interface agreements dated back to 1990, and it appeared they had not been updated to include Y2K concerns. We were advised that the remaining 11 systems were "stand alone" and did not require interface agreements. However, there was no documentation to support that conclusion or certify its accuracy.

**San Antonio.** The six systems we reviewed at the San Antonio ALC were critical systems and required contingency plans. Although four of the six systems had contingency plans, the plans did not meet the requirement of the DoD Management Plan. None of the six systems had test plans and test results on file, and interface agreements were not required because the systems were stand alone systems. The following table summarizes the result of our review.

**Logistics and Maintenance Systems Supporting Other Than AWACS Systems**  
(as of August 1998)

Required Documentation

<u>System</u>	<u>Contingency Plan</u>	<u>Test Plan</u>	<u>Test Results</u>	<u>Y2K Compliant</u>
Airborne Recorder	N/A*	No	No	Yes
All weather Landing System	N/A	No	No	Yes
Augmentor Fan Temporate Control Integrated Test System	N/A	Yes	Yes	No
Control Display Unit	N/A	No	No	Yes
Integrated Management Information Tracking System	N/A	No	No	Yes
Logistics Management Database D075	N/A	No	No	No
Maintenance Decision Support System	N/A	No	No	No
Missile Engine Automated Test System	Yes	Yes	Yes	No
Mission Communications System C-20H	No	No	Yes	No
Mission Communications System VC-25A	No	No	Yes	No
Planned Labor Application Simulation G034	N/A	No	No	No
Super High Frequency SAT COM	Yes	Yes	Yes	Yes
Automated Ground Engine Test System	No	No	No	No
Digital Engine Electronic Control	Yes	No	No	Yes
Engine Electronic Control	Yes	No	No	Yes
Engine Test/Trim Automated System II	No	No	No	No
F-100 Engine Diagnostic Unit	Yes	No	No	Yes
F-100 Events History Recorder	Yes	No	No	Yes

\*Contingency plan not required.

---

## **Appendix C. Report Distribution**

### **Office of the Secretary of Defense**

Under Secretary of Defense for Acquisition and Technology  
Deputy Under Secretary of Defense (Logistics)  
Director, Defense Logistics Studies Information Exchange  
Under Secretary of Defense (Comptroller)  
Deputy Chief Financial Officer  
Deputy Comptroller (Program/Budget)  
Assistant Secretary of Defense (Command, Control, Communications, and Intelligence)  
Deputy Assistant Secretary of Defense (Command, Control, Communications, and  
Intelligence, Surveillance, Reconnaissance, and Space)  
Director, Chief Information Officers, and Deputy Assistant Secretary of Defense (Chief  
Information Officers, Policy and Implementation)  
Principal Deputy - Year 2000  
Assistant Secretary of Defense (Public Affairs)

### **Joint Staff**

Director, Joint Staff

### **Department of the Army**

Auditor General, Department of the Army  
Inspector General, Department of the Army

### **Department of the Navy**

Assistant Secretary of the Navy (Financial Management and Comptroller)  
Auditor General, Department of the Navy  
Inspector General, Department of the Navy  
Inspector General, Marine Corps

## **Department of the Air Force**

Assistant Secretary of the Air Force (Financial Management and Comptroller)  
Auditor General, Department of the Air Force  
Commander, Air Force Materiel Command  
    Commander, Electronics Systems Center  
Inspector General, Department of the Air Force

## **Other Defense Organizations**

Director, Defense Contract Audit Agency  
Director, Defense Information Systems Agency  
Director, Defense Logistics 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

## **Non-Defense Federal Organizations**

Office of Management and Budget  
    Office of Information and Regulatory Affairs  
Technical Information Center, National Security and International Affairs Division,  
    General Accounting Office  
Director, Defense Information and Financial Management Systems, Accounting and  
    Information Management Division, General Accounting Office

**Non-Defense Federal Organizations (cont'd)**

**Congressional Committees and Subcommittees, Chairman and Ranking Minority Member**

Special Committee on the Year 2000 Technology Problem  
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 Subcommittee on National Security, Committee on Appropriations  
House Committee on Governmental 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

## **Audit Team Members**

The Readiness and Logistics Support Directorate, Office of the Assistant Inspector General for Auditing, DoD, produced this report

Shelton R Young  
Raymond D Kidd  
John A. Gannon  
Joseph M Austin  
Robert W Smith  
Marc E Avers  
Douglas P Ickes  
Samanatha P Paluski  
Hugh G. Cherry