Audit Report

DOD BASE COMMUNICATIONS SYSTEMS
COMPLIANCE WITH YEAR 2000 REQUIREMENTS

Report No. 99-027 October 30, 1998

Office of the Inspector General
Department of Defense

Additional Information and 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.

Suggestions for 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, VA 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; 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

OMB	Office of Management and Budget
Y2K	Year 2000

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

October 30, 1998

MEMORANDUM FOR ASSISTANT SECRETARY OF DEFENSE (COMMAND, CONTROL, COMMUNICATIONS, AND INTELLIGENCE)

SUBJECT: Audit Report on DoD Base Communications Systems Compliance with Year 2000 Requirements (Report Number 99-027)

We are providing this audit report for information and use. We considered management comments on a draft of this report in preparing the final report.

Management comments on the draft report conformed to the requirements in DoD Directive 7650.3. Therefore no additional comments are required.

We appreciate the courtesies extended to the audit staff. If you have questions on the audit, please contact (b) (6) [redacted] at (703) 604-(b) (6) [redacted] (DSN 664-(b) (6) [redacted] (b) (6) [redacted] @dodig.osd.mil) or (b) (6) [redacted] at (703) 604-(b) (6) [redacted] (DSN 664-(b) (6) [redacted] (b) (6) [redacted] @dodig.osd.mil). See Appendix D for the report distribution. The audit team members are listed inside the back cover.

Robert J. Lieberman
Assistant Inspector General
for Auditing

~~Special Warning~~

~~This report contains contractor information that may be company confidential or proprietary. Title 18, U.S.C., section 1905, and title 41, U.S.C., section 423, provide specific penalties for the unauthorized disclosure of company confidential or proprietary information. This report must be safeguarded in accordance with DoD Regulation 5400.7-R.~~

Office of the Inspector General, DoD

Report No. 99-027 **October 30, 1998**
(Project No. 8CC-0014)

DoD Base Communications Systems Compliance with Year 2000 Requirements

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 (Y2K) computing challenge. For a listing of audit projects addressing this issue, see the Y2K web page on IGnet[1] at internet address http://www.ignet.gov.

The audit identified 1,048 telecommunications switches owned by DoD Components. Of those 1,048 switches, DoD Components have identified 268 switches that will require upgrade or replacement for Y2K compliance. The DoD Components estimate that it will cost about $192 million to fix the switches to achieve Y2K compliance. The audit did not include validation of those estimates.

On January 20, 1998, the Office of Management and Budget (OMB) issued a memorandum, "Progress Reports on Fixing Year 2000 Difficulties," establishing a target of March 1999 for implementing Y2K fixes to all systems. The OMB has also established a deadline of September 1998, for completion on renovation and January 1999 for completion of validation. In addition, the OMB requires agencies to prepare contingency plans if the systems will not be Y2K compliant by the March 1999 deadline.

Audit Objectives. The overall audit objective was to determine whether base communications systems comply with Y2K requirements. Specifically, we determined whether selected DoD installations have identified the base communications systems that perform date function, and determined whether those systems are Y2K compliant.

Audit Results. Of 268 telecommunications switches identified by DoD Components as non-Y2K compliant, 131 will not be compliant by the OMB March 1999 deadline. Additionally, none of the DoD Components whose switches will not meet the OMB deadline had contingency plans. As a result, DoD telecommunications capabilities may become unstable, unpredictable, and the cumulative impact of non-Y2K compliant operational occurrences could result in system failure. Further, DoD may miss available vendor discounts on switch and software fixes if the required work is delayed.

The need to accelerate switch replacements has been briefed to the Deputy Secretary of Defense, and the Under Secretary of Defense (Comptroller) has been tasked to provide

---

[1] IGnet is an internet site operated by the Inspector General Community. The Inspector General Community consists of the Offices of Inspector General in more than 60 Federal agencies, as well as their peers in state and local government, education, nonprofit organizations, and the private sector.

advice or direction on the related funding issues. Therefore, this report makes no recommendations on funding. We emphasize, however, that it is important to consider the funding situation for all DoD Components identified in this report as having non-Y2K compliant telecommunications switches.

Summary of Recommendations. We recommend that Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) direct that the Chief Information Officers in DoD Components prepare contingency plans for those telecommunications switches that are not expected to be Y2K compliant by the Office of Management and Budget deadline of March 1999, and monitor progress on development of those contingency plans.

Management Comments. Comments received from the Senior Civilian Official in the Office of the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) concurred with the recommendations. A discussion of management comments is in the Finding section of the report and the complete text is in the Management Comments section.

Table of Contents

Executive Summary i

Introduction

Background 1
Objectives 4

Finding

Year 2000 Fixes for Telecommunications Switches 5

Appendixes

A. Audit Process 10
Scope 10
Methodology 11
Prior Audit Coverage 12
B. Status of Planned Fixes for Non-Year 2000 Compliant Telecommunications Switches 13
C. Deputy Secretary of Defense Memorandum 15
D. Report Distribution 16

Management Comments

Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) Comments 18

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, information systems have typically used two digits to represent the year, such as "98" for 1998, to conserve on electronic data storage and to reduce operating costs. With the two-digit format, however, the Year 2000 is indistinguishable from 1900. As a result of the ambiguity, computers and associated system and application programs that use dates to calculate, compare, or sort could generate incorrect results when working with years following 1999. Calculation of Year 2000 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 also recognize February 29, 2000, as a valid date.

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 Year 2000 Management Strategy. In his role as the DoD Chief Information Officer, the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) issued the "DoD Y2K Management Plan" (DoD Management Plan) in April 1997. The DoD Management Plan provides the overall DoD strategy and guidance for inventorying, prioritizing, fixing, 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 Year 2000 management process. The DoD Management Plan includes a description of the five-phase Year 2000 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.

The Secretary of Defense Memorandum, "Year 2000 Compliance," August 7, 1998. The memorandum states that DoD is making insufficient progress in its efforts to solve its Y2K computer problem. The Secretary directed the following:

- The Chairman of the Joint Chiefs of Staff is to develop a Joint Y2K operational evaluation program by October 1, 1998.

~~FOR OFFICIAL USE ONLY~~

- Starting with the next quarterly report, each of the Unified Commanders-in-Chief, is to review the status of Y2K implementation within his command and the command of subordinate Components.
- By October 1, 1998, the Services and Defense Agencies will each report every Acquisition Category system within their purview.
- The Military Departments, Commanders-in-Chief, and Defense agencies will be responsible for effecting the following changes by October 1, 1998.
    - The list of mission-critical systems under his or her respective purview will be accurately reported in the DoD Y2K database.
    - Funds will not be obligated for any mission-critical system that is listed in the Y2K database that lacks a complete set of formal interface agreements for Y2K compliance.
    - Funds will not be obligated for any contract that is for information technology or for any national security system that processes date-related information and that does not contain Y2K requirements specified in Section 39.106 of the Federal Acquisition Regulation.

However, as of October 20, 1998, all required responses had not been received from some Defense Agencies.

The Deputy Secretary of Defense Memorandum, "Year 2000 Verification of National Security Capabilities," August 24, 1998. The memorandum directed that each principal staff assistant of the Office of Secretary of Defense must verify that all functions under his or her purview will continue unaffected by Y2K issues. Plans for Y2K related end-to-end testing of each process within each functional area must be provided to the Deputy Secretary of Defense by the designated Principal Staff Assistant by November 1, 1998. The testing activities and facilities of the Military Services will be used to the fullest extent possible.

Private Branch Exchange. A private branch exchange is a private telephone switching system, usually located on the user's premises. It is connected to a common group of lines from one or more public central telephone offices to provide service to a number of individual phones, such as on a DoD installation. Modern switches are digital. The switch provides the dial tone, interprets the phone number dialed, and connects the phone or telephone device to the correct party. The switch may be integrated with other telecommunications capabilities such as data and video transmission, voice mail, or emergency services. The switch includes a diagnostic capability and redundancy to ensure that the communications capability is performed reliably. The switch also generates data on the use of the phone system that may be used for billing. Within DoD, a single switch may be used to support an entire military base. Communications capabilities for a military base are usually managed by a base commander or individual agencies within a defined geographical area. Our audit focused on the year 2000 (Y2K) compliance for telecommunications switches.

The operating system for the switch is a complex computer software program, designed by the manufacturer specifically for a particular switch model and design.

The operating system may consist of up to 27 million lines of software code. Many of the functions performed by the hardware and software are date sensitive. Table 1 details 1,048 telecommunications switches within DoD.

Table 1. Number of Telecommunications Switches Identified by Audit

Army and Army Reserves	261
Navy	171
Air Force and Air Force Reserves	197
Marine Corps	17
Army and Air National Guard	276
Other Defense	
Total	**1,048**

On January 20, 1998, in a memorandum for the heads of executive departments and agencies, the Office of Management and Budget (OMB) established March 1999 as a new target date 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. A description of those phases is provided in Table 2.

Table 2. Year 2000 Phases

Phase	Objectives	Target Date
Renovation	Making and documenting software and hardware changes, developing replacement systems, and eliminating systems	September 1998
Validation	Testing of converted or replaced systems and complex interactions for Y2K compliance	January 1999
Implementation	Extensive integration and acceptance testing to ensure that all converted or replaced system components perform adequately in a heterogeneous operating environment	March 1999

~~FOR OFFICIAL USE ONLY~~

In addition, OMB requires agencies to prepare contingency plans for mission critical systems that will not be fixed by the March 1999 deadline. A contingency plan is a plan for responding to the loss of system use because of disaster such as a flood, fire, computer virus, or major software failure. The plan outlines procedures for emergency response, backup, and post-disaster recovery. Unlike routine system development or maintenance efforts where missed milestones are common but nonfatal, the Y2K program must be completed on time. Contingency planning is an essential element of risk management. Without researching what contingencies are available in case of system failure because of the Y2K problem, telecommunications managers cannot effectively prioritize the efforts required to resolve the Y2K problems.

Further, DoD established a series of Y2K Interface Assessment Workshops to address the interface issues and operability concerns associated with 21 functional areas, including communications. The agenda for each workshop is established by the DoD Special Assistant for Year 2000 and the Office of the Secretary of Defense-level functional proponents.

Management Control Program. We did not review the management control program as it 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. The Office of the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) advised us that the switches are mission critical. However, based on the information provided by the DoD Components, we could not clearly determine whether switches had been identified as a Y2K reporting unit.

The Defense Logistics Agency reported additional information in response to a draft of this report which changed the count of non-Y2K compliant telecommunications switches in this report.

Objectives

The overall audit objective was to determine whether base communications systems comply with year 2000 requirements. Specifically, we determined whether selected DoD installations have identified the base communications systems that perform date function, and determined whether those systems are year 2000 compliant. See Appendix A for a discussion of the audit process and prior coverage related to the audit objectives.

~~FOR OFFICIAL USE ONLY~~

Year 2000 Fixes for Telecommunications Switches

Of 268 telecommunications switches identified by DoD Components as non- Y2K compliant, 131 will not be compliant by the OMB March 1999 deadline. Additionally, none of the DoD Components whose switches will not meet the OMB deadline had contingency plans. This occurred because of insufficient or delayed funding to make the switches Y2K compliant. As a result, DoD telecommunications capabilities may become unstable, unpredictable, and the cumulative impact of non-Y2K compliant operational occurrences is expected to result in system failure, and DoD may miss available vendor discounts on switch and software fixes if the required work is delayed.

Year 2000 Fixes on DoD Telecommunications Switches

Although, DoD Components have begun fixing 268 non-Y2K compliant telecommunications switches, only 137 of the non-Y2K compliant switches are expected to be fixed by the March 1999 deadline established by OMB (see Appendix B). There is a high risk that progress will be slower than expected without immediate funding of the remaining Y2K requirements. Additionally, DoD Components had not developed contingency plans for each of 131 non-Y2K compliant telecommunications switches that will not meet the OMB deadline. Contingency planning is an essential element of risk management.

Funding Problem for Year 2000 Fixes

Completion of all switch work by the year 2000 is also contingent upon immediate funding of the remaining work. The Services have not complied with DoD guidance to reprogram and direct funds to resolve Y2K problems. Under the 1998 Department of Defense Appropriations Act (Public Law 105-56), Section 8051, operations and maintenance funds were not to be used to purchase items with an investment item unit cost of more than $100,000. The Army, Navy, and Air Force were relying on FY 1999 telecommunications procurement funds, rather than reprogramming FY 1998 funds, to fix the remaining communication switches. The Army National Guard had no procurement funds programmed to fix its switches but had requested funding assistance from the Assistant Secretary of the Army (Financial Management and Comptroller).

In some cases, delivery orders had been prepared for use against existing telecommunication contracts, but not used until funds are available for obligation. Once funded, a switch will require up to 45 weeks to upgrade it to Y2K compliant

status and perform the required tests. Additionally, we were told that Northern Telecom (Nortel), a manufacturer of many of the noncompliant switches, required 35 weeks lead-time to deliver the conforming switches. This shipment delay was caused by significant increased demands from Nortel customers who also need to fix Y2K problems. Therefore, immediate funding was needed to enable DoD to complete the switch fixes before the year 2000. Table 3 shows the status of funding for DoD components with non-Y2K compliant switches.

Table 3. Status of Funding for DoD Components with Non-Y2K Compliant Switches

Agency	Noncompliant Y2K Switches	Total Funds Required	FY 1997 Procurement Funds Used	FY 1998 Procurement Funds to be Used	FY 1999 Funding Plan	Unfunded
Army and Army Reserves	74	$59,000,000	0	$29,800,000	$29,200,000	0
Navy[1]	29	39,500,000	0	17,200,000	22,300,000	0
Air Force and Air Force Reserves	71	60,000,000	0	30,000,000	30 000,000	0
Marine Corps[1]	14	17,900,000	$3,000,000	14,900,000	0	0
Army National Guard	38	6,751,950	0	0	0	$6,751,950
Air National Guard	4	4,350,000	0	1,950,000	2,400,000	0
Defense Finance Accounting Service	5	29,000	0	29,000	0	0
Defense Intelligence Agency	2	229,921	0	229,921	0	0
Defense Information Systems Agency	8	4,000,000	0	4,000,000	0	0
Defense Logistics Agency	6	125,683		125,683	0	0
Defense Telephone Service Washington[2]	17	(see note below)	0	0	0	0
Total	**268**	**$191,886,554**	**$3,000,000**	**$98,234,604**	**$83,900,000**	**$6,751,950**

[1] The Navy and Marine Corps Reserves did not own any communications switches

[2]Defense Telephone Service Washington switches are leased from Bell Atlantic Bell Atlantic has advised the Defense Telephone Service Washington that switches were repaired by Lucent Technologies in September 1998 at no cost to the Government

Without immediate funding, opportunities may be lost to obtain more efficient and cost-effective solutions to Y2K problems. For example, during November 1997, Nortel announced a 50 percent discount on Y2K compliant switches for DoD, if the switches were purchased by December 1998. The purpose of the discount was to encourage DoD to fix switches early so that Nortel could balance expected commercial and Government demand for fixing noncompliant switches before the year 2000. DoD will not be able to take advantage of a discount offered by Nortel if the funds are not obligated by December 1998 and may risk uncompleted Y2K compliance of switches because of an imbalanced workload. Conversely, Nortel may not be able to meet the demand for switches for both DoD and commercial customers in time if all the repair workload is shifted to the remaining months before the year 2000. Inadequate or delayed funding will heighten the risk that DoD may not fix all the switches by the year 2000.

~~FOR OFFICIAL USE ONLY~~

Effects of Non-Year 2000 Compliant Telecommunications Switches

Potential for Unreliable Communications. General Telephone and Electronics Corporation, known as GTE Corporation, has a telecommunications contract with the Army and a telecommunications contract with the Navy and Air Force to install many of the new switches. A senior GTE representative told us that the communications capabilities of a telephone system may not be immediately impacted by Y2K problems, but a system will become unstable, unpredictable and crippled over time by the cumulative impact of operational occurrences. Possible operational impacts from non-Y2K compliant switches include the following possibilities.

- **Gradual deterioration of system functions.** Internal "garbage collection" activities will stop being scheduled resulting in unpredictable system operation and unscheduled maintenance with a potential loss of dial tone and termination of telephone calls in process.

- **System diagnostics will convey unreliable information to the switch operating personnel.** System status and operational performance reporting will be inaccurate resulting in unpredictable problems and the inability of switch personnel to perform preventative maintenance. Switch personnel may not be notified of abnormal conditions that require their attention to correct.

- **Operational and maintenance tools will become unavailable or inaccurate.** System performed tests of communication lines, which are supposed to be performed automatically on a recurring basis, may not be performed properly. This may cause faulty circuits to go undetected by switch operating personnel. Additionally, routine tests of the spare central processor may not be performed which could lead to an inability to detect problems with the backup processor.

- **Information processing of date related information.** Inaccurate date representation, processing, and calculation of elapsed time will occur preventing accurate agency chargebacks and billings.

- **Undiagnosable system faults.** Inability to retrieve information on system faults which is intended to provide switch operating personnel with information needed to fix any detected problems. Some formats will be unreadable.

Effects from Non-Y2K Compliant Switches Discovered During DoD Testing. Representatives from the Services, the Joint Interoperability Test Command, and Nortel, a major telecommunications switch manufacturer, jointly conducted Y2K testing at Shepherd Air Force Base, Texas. The purpose of the testing was to assess the effect of the Y2K transition on two versions of Nortel MSL-100 switches. The two switches were installed at Shepherd Air Force Base and used as training platforms for switch technicians. On July 18, 1997, both switches

were transitioned into the year 2000. After the transition, operation of both switches was monitored to determine if any Y2K abnormalities were present.

Both switches ran under load until November 21, 1997. The tests identified the following problems.

- **Login password failure.** The processor running switch system software marked all valid passwords as invalid. A cold restart was needed to recover the switch and allow it to recognize existing passwords. This failure did not affect call processing but was a serious failure in terms of the maintainability of the system. No troubleshooting, maintenance, or database administration procedures were possible as long as the passwords were unusable. If there had been a major system failure when all login passwords were unusable, recovery would have been more time consuming.

- **Automatic line test failure.** The switch did not perform automatic line tests as expected. Since automatic testing routines were not being performed by the switch, manual procedures must be sustained or line testing may be discontinued. If these line tests are not performed, faulty circuits could go undetected.

- **Service order processing failure.** Scheduled service orders could not be processed. This failure made database administration more difficult.

DoD Operational Impact

A representative from the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) told us that communications switches had been identified as a mission critical system. DoD currently maintains numerous communications systems, in addition to telecommunications switches, that are critical to command, control, communications, and computer functions, or that may interface with the Defense Information Systems Network. For example, DoD maintains long-haul telecommunications, voice, data, and video links and associated controllers; telecommunications network management systems; bandwidth management systems; wide area and metropolitan area networks; base level local area networks and cable plants; tactical voice systems, message processing systems, data link systems, and associated controllers. Any communications system that manages, calculates, displays, stores, retrieves, or otherwise manipulates dates in order to perform (or help a system perform its functions) may not function properly after 1999. Further, public telephone vendor's communications systems may not be able to recognize the century change; resulting in improper billing for calls to DoD, incorrectly time stamped electronic commerce bids and voicemail messages, and incorrectly routed calls. The full impact of failure to make those required changes before January 1, 2000, may not be known until the problems have already occurred.

~~FOR OFFICIAL USE ONLY~~

Corrective Actions Taken by Management

The Army National Guard, the Defense Finance and Accounting Service, the Defense Information Systems Agency, the Defense Intelligence Agency, and the Defense Logistics Agency completed the assessment phase for their telecommunications switches during the course of the audit. A representative from the Office of the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) told us that, simultaneous with the conclusion of the audit, the Deputy Secretary of Defense had been briefed on the critical need for funding for non-Y2K compliant switches, and the Under Secretary of Defense (Comptroller) had been tasked to identify a funding solution. On August 13, 1998, the Deputy Secretary of Defense issued a memorandum directing the Services to make available additional FY 1998 funds as required to accelerate the procurement of the Y2K upgrades for telecommunications switching systems (see appendix C). We urge the Comptroller to monitor the switch replacement-funding situation for all DoD Components identified in this report as having non-Y2K compliant switches.

Recommendations, and Management Comments

We recommend that Assistant Secretary of Defense (Command, Control, Communications, and Intelligence):

1. Direct that the Chief Information Officers in DoD Components prepare contingency plans for those telecommunications switches that are not expected to be year 2000 compliant by the Office of Management and Budget deadline of March 1999.

2. Monitor progress on development of those contingency plans.

Management Comments

A draft of this report was issued on August 10, 1998. The Senior Civilian Official of the Office of the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) concurred with the recommendation and stated, "The switching problem remains to be a very high priority in ASD (C^3I), and we are taking additional actions including directing the Services to accelerate the switch implementation schedule." A complete text of the management comments is attached.

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 a listing of audit projects addressing this issue, see the Y2K web page on the IGnet at <http://www.ignet.gov>.

Scope

Audit Work Performed. We included the Services and Defense agencies in our review. We met with telecommunication managers within the Office of the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence); the Services; the Army and Air National Guard; Armed Forces Information Services; the Defense Finance and Accounting Service; the Defense Information Systems Agency; the Defense Intelligence Agency; the Defense Logistics Agency; Defense Telephone Service Washington; National Imagery Mapping Agency; On-Site Inspection Agency; and the U.S. Southern Command. Through those meetings and information provided by DoD Components, we

- developed a total inventory of 1,048 telecommunications switches;
- identified 268 switches that needed to be upgraded to make them Y2K compliant;
- assessed management plans, schedules, and funding for upgrading the switches; and
- determined the adequacy of any contingency plans.

We also compared those schedules for upgrades with DoD Management Plans and OMB milestones for Y2K compliance. We did not validate the number of switches identified by the DoD Components, the number of switches identified as noncompliant Y2K, or the cost estimates to upgrade the switches.

At the invitation of the Army Communications Electronics Command, we visited one of the switch facilities that was scheduled for upgrade. We met with a representative of General Telephone and Electronics Corporation that had contracts with the Services to repair the switches. The purpose of the meeting was to confirm the accuracy of the schedules and ascertain that the schedules for performing the switch upgrades could be met. We contacted representatives of Lucent Technologies and Northern Telecom to assess the impact on DoD should the telecommunication switches not be fixed in time and to obtain answers to technical questions regarding the switches. Additionally, we reviewed test results

~~FOR OFFICIAL USE ONLY~~

from a test performed by the Joint Interoperability Test Command, Defense Information Systems Agency, on non-Y2K compliant switches. We attended Interactive Assessment Workshops for Communications sponsored by the Office of the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) to monitor progress being made on fixing the switches.

Methodology

Audit Type, Dates, and Standards. We performed this program audit from January to July 1998. The audit was made in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD. We included tests of management controls we considered necessary.

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. The Office of the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) advised us that the switches are mission critical. However, based on the information provided by the DoD Components, we could not clearly determine whether switches had been identified as a Y2K reporting unit.

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 objectives and goals.

- **Objective:** Prepare now for an uncertain futures. **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 Function Area. Objective: Become a mission partner. **Goal:** Serve mission information uses 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)**

General Accounting Office High-Risk Area. The General Accounting Office has identified several high-risk areas in the DoD. This report provides coverage of the Information Management and Technology high-risk area.

Prior Audits 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>.

Appendix B. Status of Planned Fixes for Non-Year 2000 Compliant Telecommunications Switches

Organization	Switch Type		Noncompliant Year 2000 Switches	Year 2000 Fixes by March 1999	Remain to be fixed
Army and Army Reserves	Nortel SL100		72	37	35
	Lucent 5ESS		1	0	1
	Lucent SYS85		1	0	1
		Total	74	37	37
Navy	Nortel SL 100		11	2	9
	Nortel DMS		4	3	1
	Lucent 5ESS		6	4	2
	Lucent D2000		2	2	0
	Lucent G3R		2	1	1
	Itatel BX5000		1	0	1
	Mitel		1	1	0
	Hitachi		1	1	0
	Rolm		1	1	0
		Total	29	15	14
Air Force and Air Force Reserves	Hitachi DBX 1200		1	0	1
	Hitachi HCX		1	0	1
	Lucent 5ESS		1	1	0
	Lucent Telex 5000		1	1	0
	Lucent System 75		1	0	1
	Nortel DMS 100		20	7	13
	Nortel MSL 100		45	24	21
	Omni System 3		1	0	1
		Total	71	33	38
Marine Corps	Nortel SL 100		8	8	0
	Lucent 5ESS		1	1	0
	Rolm 8000		1	1	0
	Rolm 9000		1	1	0
	Hitachi		1	1	0
	Mitsubishi		1	1	0
	Fujutsu		1	1	0
		Total	14	14	0

~~FOR OFFICIAL USE ONLY~~

Organization	Switch Type		Noncompliant Year 2000 Switches	Year 2000 Fixes by March 1999	Remain to be fixed
Army National Guard	ATT DIM-100		1	0	1
	ATT DIM-400		8	0	8
	ATT DIM-600		1	0	1
	ATT System 25		1	0	1
	ATT System 85		1	0	1
	Lucent System 75 XE		2	0	2
	Lucent G31		5	0	5
	Lucent G3R		1	0	1
	Lucent System 75		7	0	7
	Lucent G3S		2	0	2
	Mitel SX2000		1	0	1
	Octelvm Octel		3	0	3
	Fujitsui S-111		1	0	1
	Rolm R8000		1	0	1
	Tie Electric T3100		1	0	1
	Seimans Saturnie		1	0	1
	SR-1000 Solid State		1	0	1
		Total	38	0	38
Air National Guard	Nortel DMS 100		1	0	1
	Nortel MSL 100		1	0	1
	Nortel MSL 100		1	0	1
	Nortel MSL 100		1	0	1
		Total	4	0	4
Defense Finance Accounting Service	Nortel SL 110		1	1	0
	Nortel Meridian		2	2	0
	Lucent G31		2	2	0
		Total	5	5	0
Defense Information Systems Agency	Nortel SL 100		1	1	0
	Nortel MSL 100		2	2	0
	Nortel DMS 100		3	3	0
	Lucent 5ESS		2	2	0
		Total	8	8	0
Defense Intelligence Agency	Lucent 5ESS		1	1	0
	Lucent CDX		1	1	0
		Total	2	2	0
Defense Logistics Agency	Lucent G1/G31		3	3	0
	Lucent G3I-V3		1	1	0
	Lucent Legend		1	1	0
	NEC NEAX 2400		1	1	0
		Total	6	6	0
Defense Telephone Service Washington	Lucent 5ESS		17	17	0
		Total	17	17	0
		Grand Total	**268**	**137**	**131**

~~FOR OFFICIAL USE ONLY~~

Appendix C. Deputy Secretary of Defense Memorandum

DEPUTY SECRETARY OF DEFENSE

1010 DEFENSE PENTAGON
WASHINGTON, DC 20301-1010

13 AUG 1998

MEMORANDUM FOR DIRECTOR, INFORMATION SYSTEMS FOR COMMAND, CONTROL, COMMUNICATIONS AND COMPUTERS, U.S. ARMY
DIRECTOR, SPACE AND ELECTRONICS WARFARE, U.S. NAVY
DIRECTOR, COMMUNICATIONS AND INFORMATION, U.S. AIR FORCE
DIRECTOR, DEFENSE INFORMATION SYSTEMS AGENCY
DIRECTOR, DEFENSE LOGISTICS AGENCY

SUBJECT: Acceleration of the Procurement and Implementation of Year 2000 Upgrades for Telecommunication Circuit Switches

I am concerned that we are taking undue risk by waiting for FY 1999 appropriations to procure the remaining Y2K modifications for telecommunications circuit switches. A review of our Command and Control capabilities worldwide, the interdependencies of the Defense Switched Network (DSN), and the base/post/camp/station circuit switches has highlighted the importance of the DSN to the warfighters. Based on the importance of circuit switches, dependence on the production capability of a limited number of vendors, and competing priorities of the marketplace, I have concluded that the current compliance schedule provided by the Services is in jeopardy.

In order to mitigate potential schedule risk, the Services must make available additional FY 1998 funds as required to accelerate the procurement of the subject telecommunications switching systems. The importance of having a fullyY2K compliant DSN cannot be overstated, immediate attention in this matter must be taken by all concerned. Implementation of the planned procurements will be monitored by OASD (C31) at future Year 2000 Interface Assessment workshops

John J. Hamre

~~FOR OFFICIAL USE ONLY~~

Appendix D. Report Distribution

Office of the Secretary of Defense

Under Secretary of Defense for Acquisition and Technology
  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)
  Year 2000 Oversight and Contingency Planning Office
Assistant Secretary of Defense (Public Affairs)

Department of the Army

Assistant Secretary of the Army (Financial Management and Comptroller)
Auditor General, Department of the Army
Chief Information Officer, 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
Chief Information Officer, 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
Chief Information Officer, Air Force
Inspector General, Department of the Air Force

Other Defense Organizations

Director, Defense Contract Audit Agency
Director, Defense Information Systems Agency
  Inspector General, Defense Information Systems Agency
  Chief Information Officer, Defense Information Systems Agency
  United Kingdom Liaison Officer, Defense Information Systems Agency
Director, Defense Logistics Agency
Director, Defense Special Weapons Agency
Director, National Security Agency
  Inspector General, National Security Agency
Director, On-Site Inspection Agency

~~FOR OFFICIAL USE ONLY~~

Inspector General, Defense Intelligence Agency
Inspector General, National Imagery and Mapping Agency
Inspector General, National Reconnaissance Office

Non-Defense Federal Organizations

Chief Information Officer, General Services Administration
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

Chairman and ranking minority member of each of the following congressional committees and subcommittees:

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 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

Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) Comments

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
6000 DEFENSE PENTAGON
WASHINGTON, DC 20301-6000

COMMAND, CONTROL, COMMUNICATIONS, AND INTELLIGENCE

September 9, 1998

MEMORANDUM FOR INSPECTOR GENERAL, DEPARTMENT OF DEFENSE

SUBJECT: Audit Report on DoD Base Communication Systems Compliance with Year 2000 Requirements (Project No. 8CC-0014) (Draft), August 10, 1998

The Office of the Assistant Secretary of Defense (C3I) has reviewed the subject draft report and agrees with the findings and recommendations

The issue of base level switching Y2K compliance has been a high priority concern; since it was first identified in the spring of 1997. We have conducted numerous reviews on the subject, including discussions at each of the four Communication Systems Interface Assessment Workshops (IAWs) dating back to the first IAW held on July 28, 1997. In response to our reviews many of the higher risk bases have developed contingency plans for the switching systems in question The contingency plan development is consistent with the main recommendation of the report, which is to require the Services to prepare contingency plans at all high-risk installations. I concur with this recommendation and will expand the contingency plan requirement to include all switches that are not expected to be compliant by March 1999, as recommended in the audit report The recommendation to closely monitor the progress of contingency plan development will be done by my Communications and Command & Control Battle Management Directorate. The additional contingency plan requirements will be documented in a memorandum from me to the applicable Components.

The switching problem remains to be a very high priority in ASD (C3I) , and we are taking additional actions including directing the Services to action to accelerate the switch implementation schedule

My point of contact on this report is [redacted], OASD (C3I), Communications and C2 Battle Management Directorate, (703) 607-[redacted]

Arthur L. Money
Senior Civilian Official

~~FOR OFFICIAL USE ONLY~~

Audit Team Members

This report was prepared by the Comment Management Directorate, Office of the Assistant Inspector General for Auditing, DoD.

(b) (6)

[redacted]