PERFORMANCE AUDIT

DEPARTMENT OF COMMERCE
INFORMATION TECHNOLOGY SERVICES
YEAR 2000 PROJECT OFFICE

MARCH 1999

STATE OF NORTH CAROLINA
Office of the State Auditor

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AUDITOR'S TRANSMITTAL

March 18, 1999

The Honorable James B. Hunt, Jr., Governor
Secretary Rick Carlisle, Department of Commerce
Members of the North Carolina General Assembly

Ladies and Gentlemen:

We are pleased to submit this performance audit of the *Department of Commerce, Information Technology Services, Year 2000 Project Office.* The objectives of the audit were to review the functions and responsibilities of the Project Office, examine the procedures used by the Project Office in managing the statewide effort, document the level of compliance achieved by State agencies in converting their systems, calculate the costs associated with the statewide project, review the method for paying for project services, and compare the manner in which other states are providing project management services.

This report consists of an executive summary, program overview, and operational findings and recommendations. The Secretary of Commerce has reviewed a draft copy of this report. His written comments are included as Appendix A.

We wish to express our appreciation to Secretary Carlisle and his staff for the courtesy, cooperation, and assistance provided us during this effort.

Respectfully submitted,

Ralph Campbell, Jr.

Ralph Campbell, Jr.
State Auditor

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY 1

AUDIT OBJECTIVES, SCOPE, AND METHODOLOGY 3

BACKGROUND INFORMATION 5

FINDINGS AND RECOMMENDATIONS 11
- Organization, Function, And Responsibilities 11
- Conversion Standards 13
- Agency Compliance 17
- Payments To Vendors 19
- Liability 23
- Statewide Y2K Costs 25
- Comparison To Other States 25

TABLES:
1 Approved Convenience Contractors 8
2 Approved Conversion Contractors 8
3 Year 2000 Project Office Financial Data, FY1997-98 9
4 Statewide Year 2000 Special Fund Summary of Financial Data 9
5 Expenditures from Statewide Year 2000 Special Fund, During FY1997-98 24
6 Statewide Cost Estimates by Agency as of June 30, 1998 25
7 Other States Survey Results 27

EXHIBITS:
1 Year 2000 Steering Committee 6
2 Estimated Year 2000 Conversion Costs 7
3 Year 2000 Project Office Organizational Chart as of December 1998 12
4 Convenience Contract Processes and Procedures 20
5 Conversion Contract Processes and Procedures 21
6 Vendor Payment Procedures 22

APPENDIX:
A Department of Commerce Response 33

DISTRIBUTION OF AUDIT REPORT 41

EXECUTIVE SUMMARY

We have conducted a performance audit of the Year 2000 Project Office within the Information Technology Services Division of the Department of Commerce. This audit was agreed upon in the Memorandum of Understanding between the Department of Commerce and the Office of the State Auditor dated August 4, 1998. The Memorandum of Understanding provided for the State Auditor to oversee an independent validation and verification (IV&V) of mission critical state applications, present a statewide report of the results of the effort, and conduct a performance audit of the Year 2000 Project Office. The IV&V project is underway and a report is expected early this fall. This performance audit focused on the functions and responsibilities of the Project Office, the procedures used by the Project Office in managing the statewide effort, the level of compliance achieved by State agencies in converting their systems, the costs associated with the statewide project, the method for paying for project services, and the manner in which other states are providing project management services.

The Year 2000 problem refers to deficiencies in electronic data processing systems that cause programs to mistake references to the year 2000. Since many programs were created using only a two-digit year reference, the computers recognize the date "00" as 1900 rather than 2000. North Carolina State government began addressing this problem in late 1995. The Year 2000 Project Office was officially created in 1997 within the Office of the State Controller (OSC). Also during 1997, the Year 2000 Steering Committee was formed and the Statewide Year 2000 Special Fund was established to fund conversion projects at the State agencies. When technology functions for the State were transferred from OSC during April 1997, the Department of Commerce took the lead role for the statewide project.

The draft report was reviewed by the Secretary of Commerce. The Secretary's response is included as Appendix A, page 33. Overall, we found that the Year 2000 Project Office was effectively managing the State's conversion efforts. However, there are a few areas where we believe changes can improve the Project Office's operations.

FINDINGS AND CONCLUSIONS

Page

THE ORGANIZATIONAL STRUCTURE, SPECIFIC FUNCTIONAL AREAS, AND THE DELINEATION OF RESPONSIBILITIES APPEAR APPROPRIATE TO OVERSEE THE MANAGEMENT OF THE YEAR 2000 PROJECT. 13

IN GENERAL, THE PROJECT OFFICE IS FOLLOWING AND PROMOTING EFFECTIVE MANAGEMENT POLICIES FOR THE YEAR 2000 EFFORT. 13

THE STATEWIDE MISSION CRITICAL SYSTEM LISTING IS NOT ACCURATE. 14

RESOURCE RESTRICTIONS LIMIT THE VERIFICATION OF DATA REPORTED BY AGENCIES. 15

THE STATE HAS NOT ADEQUATELY PREPARED FOR CONVERSION OF NON-INFORMATION TECHNOLOGY (NON-IT) ASSETS. 15

CONTINGENCY PLANS ARE NOT BEING DEVELOPED FOR ALL SYSTEMS. 16

FINDINGS AND CONCLUSIONS (concluded)

Page

THE LEVEL OF COMPLIANCE FOR EACH AGENCY CANNOT BE ACCURATELY DOCUMENTED.....17

OTHER INFORMATION TECHNOLOGY PROJECTS MAY CONFLICT WITH THE YEAR 2000 CONVERSION EFFORT. 17

THERE ARE NO ASSURANCES THAT SYSTEMS WILL NOT FAIL AS A RESULT OF THE YEAR 2000 PROBLEM.....18

THE PROJECT OFFICE HAS APPROPRIATELY MONITORED THE FUNDING PROVIDED FOR THE YEAR 2000 EFFORTS.....22

CONTRACT FILES ARE NOT ADEQUATELY MANAGED AND PURCHASE ORDERS ARE NOT PROCESSED TIMELY. 22

THE GENERAL ASSEMBLY SHOULD CONSIDER PASSING LEGISLATION THAT PROVIDES NORTH CAROLINA IMMUNITY FROM LIABILITY SHOULD SOME YEAR 2000 INDUCED FAILURES OCCUR.....23

NO STATEWIDE TRACKING SYSTEM EXISTS FOR FUNDS EXPENDED DIRECTLY BY AGENCIES ON YEAR 2000 RELATED PROJECTS.....24

THE NORTH CAROLINA YEAR 2000 PROJECT OFFICE IS A STATE LEADER IN THE HANDLING OF YEAR 2000 ISSUES. 25

AUDIT OBJECTIVES, SCOPE, AND METHODOLOGY

North Carolina General Statute § 147-64 empowers the State Auditor with authority to conduct performance audits of any State agency or program. Performance audits are reviews of activities and operations to determine whether resources are being used economically, efficiently, and effectively.

This performance audit of the Statewide Year 2000 Project Office (Project Office), within the Department of Commerce, was agreed upon in the Memorandum of Understanding between the Department of Commerce and the Office of the State Auditor dated August 4, 1998. The State Auditor agreed to conduct a performance audit of the Project Office in conjunction with oversight of an Independent Validation and Verification (IV&V) effort of appropriate state applications with emphasis on mission critical, financial applications. The statewide report on the IV&V project is scheduled for release by September 1, 1999.

The specific objectives of this performance audit were to:

- Determine the current organizational structure and identify the functions and responsibilities of the Project Office.
- Determine if the Project Office is following accepted Year 2000 conversion standards.
- Document the level of compliance of each agency as monitored by the Project Office.
- Determine whether procedures are in place to ensure that payments to vendors are properly authorized, whether controls exist to verify that services were performed, and determine compliance with applicable State laws and regulations.
- Ascertain the liable parties and their extent of liability should any system fail despite conversion efforts.
- Determine the amount spent throughout State government for Year 2000 projects and estimate the amount to be spent.
- Compare North Carolina's Year 2000 efforts with those of other states.

The scope of the audit encompassed all aspects of the operations of the Project Office. To the extent necessary, the operations of the Information Technology Services (ITS) division within the Department of Commerce and the Year 2000 Steering Committee were included to conduct the review of the Project Office.

During the period September 28, 1998, through December 15, 1998, we conducted the fieldwork for the audit of the Project Office. To achieve the audit objectives, we employed various auditing techniques which adhere to the generally accepted auditing standards as promulgated in *Government Auditing Standards* issued by the Comptroller General of the United States. These techniques included:

- Review of existing General Statutes as they relate to the Year 2000 problem.
- Review of policies and procedures of the Project Office, ITS, and the Department of Commerce.
- In-depth interviews with members of the Year 2000 Project Office staff and ITS/Department of Commerce staff.
- Review of existing studies and reports conducted on the Project Office including an external quality assurance review.
- Examination of organizational charts and job descriptions.
- Surveys and analysis of other states' Year 2000 programs.
- Review of a sample of contract files for Year 2000 conversion efforts.

- Analysis of a sample of expenditures for both the Project Office and the Statewide Year 2000 Special Fund for use by State agencies in their conversion efforts.
- Compilation of cost data.
- Comparison of the Project Office policies and procedures to those suggested by the US General Accounting Office and the Information Systems Audit and Control Association.

This report contains the results of the audit, as well as specific recommendations aimed at improving the operations of the Project Office in terms of economy, efficiency, and effectiveness. Because of the test nature and other inherent limitations of an audit, together with the limitations of any system of internal and management controls, this audit would not necessarily disclose all weaknesses in the system or lack of compliance. Also, projection of any of the results contained in this report to future periods is subject to the risk that procedures may become inadequate due to changes in conditions and/or personnel, or that the effectiveness of the design and operation of the policies and procedures may deteriorate.

The Year 2000 (Y2K) problem poses one of the most significant challenges ever faced by the information technology (IT) industry. This problem is a situation unlike any other encountered by this industry. The IT industry cannot rely on past experiences in projecting how to handle this project. However, this is not solely an information technology problem; rather, it is a management issue. For the Y2K problem to be properly addressed, management must provide effective project leadership.

While the Y2K problem is not technically challenging, it is time-consuming and costly. Some IT experts have estimated the worldwide cost of fixing the Y2K problem to be as much as $600 billion. The volume of computerized business processes makes this time-critical problem an imposing task. Unlike most other projects, the time frame for the Year 2000 effort is immovable. Project leaders cannot simply change the date that the project must be complete. When January 1, 2000 arrives, an entity's computer systems will either work or fail.

If agencies do not make the corrections in time, a wide range of services provided to the public could fail. These failures could lead to health and safety issues in addition to simple inconveniences caused by interruptions of business operations. For example, electronic gates at correctional facilities could open allowing inmates to escape, medical prescriptions could be invalidated preventing a patient from receiving a life-saving medication, and traffic signals could be rendered useless. Because the Y2K problem has the potential to be so pervasive, it must be addressed now in a comprehensive, orderly fashion.

WHAT IS THE YEAR 2000 PROBLEM?

The Year 2000 problem refers to shortcomings in many electronic data processing systems and equipment containing computer chips that may make operations beyond December 31, 1999 impossible. For many years, programmers eliminated the first two digits when referring to a year in computer programs to save storage space. For example, programmers would refer to 1965 as "65." As a result, the year 2000 will be depicted as "00." When January 1, 2000 arrives, many computer systems will interpret that date as January 1, 1900. This may cause the programs to process data inaccurately or stop processing data altogether. Errors could occur in date-sensitive applications that perform mathematical calculations, comparisons of data from one year to another, or sorting of year-date fields. A program that calculates ages may interpret a person born in 1997 as being 97 years old rather than three years old because the program automatically subtracts the smaller number (00) from the larger one (97). In addition, equipment such as elevators, building security systems, traffic signals, and telephone systems may also be affected by the Year 2000 problem. These systems often contain computer chips, known as embedded systems, which may cause their operation to cease similar to data processing systems.

Technology industry standards divide Year 2000 projects into five distinct stages: awareness, assessment, remediation, testing, and implementation. During the *awareness stage*, the Year 2000 problem is identified, the project is planned, and a budget is established for the project. The *assessment phase* involves identifying all systems and components and determining which systems will require conversion. The *remediation stage* encompasses the actual changes to the systems. This can be accomplished by changing each date-sensitive line of

code, using "windowing"[1] techniques to cause the program to calculate the date based on a mathematical computation, or replacing the systems. The *testing phase* attempts to determine whether all necessary changes were found and corrected and whether the system accurately processes data after conversion. Finally, the *implementation stage* involves placing the converted or replaced system into operation.

NORTH CAROLINA'S RESPONSE

In late 1995, North Carolina state government began addressing the Year 2000 problem. The staff to the Information Resource Management Commission (IRMC), who were part of the State Information Processing Services (SIPS) within the Office of the State Controller (OSC), originally reported the issue and oversaw the project. The State's efforts were formally developed during early 1997 through the establishment of a centralized office within the OSC. House Bill 53 of the 1996 Session of the General Assembly approved the inclusion of Year 2000 conversion costs in OSC's data processing charges and directed OSC to develop procedures for managing the statewide conversion. Senate Bill 352 of the 1997 Session allowed the use of up to $25 million in General Fund reversions to cover costs of conversion efforts (designated as the Statewide Year 2000 Special Fund), directed that the State Controller analyze State agency funding needs for the project, and required quarterly reports to the Joint Legislative Commission on Governmental Operations on the status and cost of the project. Also in 1997, State agencies created their own project teams, the Year 2000 Steering Committee was formed from IRMC membership and agency

EXHIBIT 1
YEAR 2000 STEERING COMMITTEE

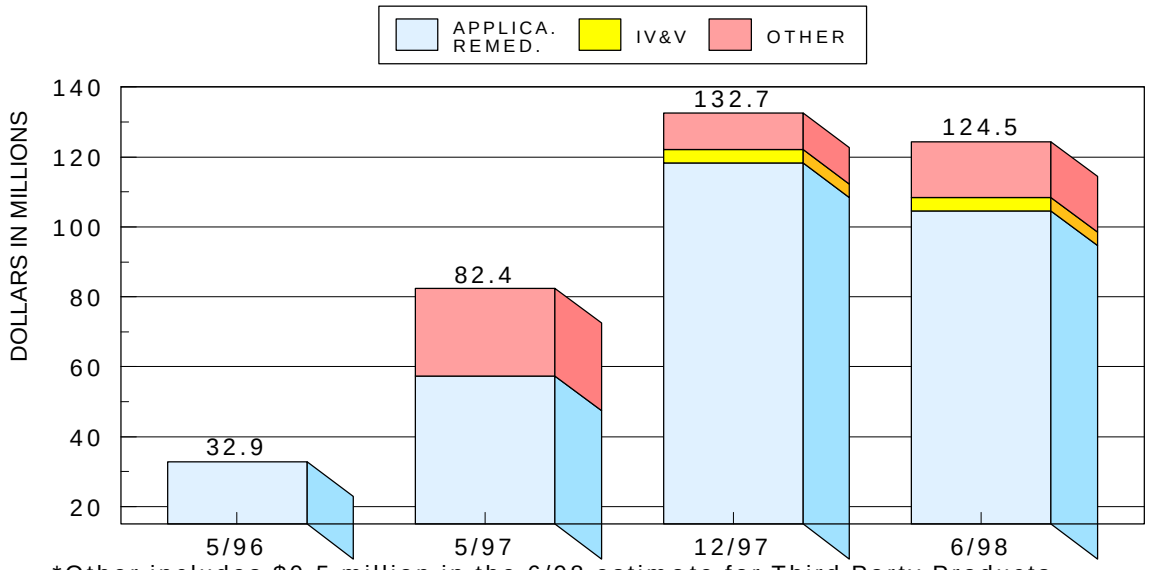
Secretary Norris Tolson, Chair	Department of Transportation
Secretary Elaine Marshall	Secretary of State
Secretary Rick Carlisle	Department of Commerce
Secretary David Bruton	Department of Health and Human Services
Superintendent Mike Ward	Department of Public Instruction
Secretary Katie Dorsett	Department of Administration
State Budget Officer Marvin Dorman	Office of State Budget and Management
Ronald Hawley	Department of Justice
Richard Holcomb	IRMC member
Bob Brinson	Department of Correction
Dr. Lenny Superville	Office of the State Auditor
Dr. Lee Mandell	North Carolina League of Municipalities
State Auditor Ralph Campbell*	Office of the State Auditor
State Purchasing Officer John Leaston*	Department of Administration
Dennis McCarty*	Information Technology Services
Henry Schaffer*	UNC General Administration
*Non-voting member	
Source: Year 2000 Project Office	

[1] Windowing refers to a process by which the program code is altered by having the program logic calculate the century according to the established window while still keeping the two-digit year reference. All years falling after the established window will be understood to refer to the 1900's and years occurring before the window will be known to refer to the 2000's. For example, a programmer could establish "50" as the window date. Whenever the program code includes a two-digit year, the program logic will understand that numbers 50 and above refer to the years 1950 to 1999 and that years below 50 refer to 2000 through 2049. Using windowing techniques negates the need to locate and change all year date references in the program code. For this reason, windowing is often cheaper and less time-consuming.

heads (see Exhibit 1 above), and project management services for the statewide effort were secured from Andersen Consulting. When all technology functions were transferred from OSC in April 1997, the Department of Commerce took the lead role for this project.

Senate Bill 1193 of the 1998 Session of the General Assembly approved an emergency appropriation of over $40 million (including amounts from the General Fund, the Highway Fund, and the SIPS Internal Service Fund) for agency projects and Project Office management. Cost estimates for the statewide conversion have varied from an initial assessment of $32.9 million in May 1996 to $82.4 million in May 1997 to $132.7 million in December 1997. At the time of the audit, estimates for the conversion of information technology assets were $124.5 million as shown in Exhibit 2. As can be seen in the Exhibit, the estimate increased significantly from May 1997 to December 1997. This is because the May 1997 estimate included project labor costs for application remediation while the December 1997 estimate also included project technology, project facilities, production infrastructure, project labor costs for non-compliant applications and for testing of complaint systems, and other agency-wide items that would have a bearing on costs. The estimates have been refined at each junction as relevant costs have been identified.

EXHIBIT 2
INFORMATION TECHNOLOGY SERVICES
ESTIMATED YEAR 2000 CONVERSION COSTS



*Other includes $0.5 million in the 6/98 estimate for Third Party Products.
Source: Year 2000 Project Office

RESPONSIBILITIES

The State of North Carolina decided to use a centralized program management approach. That is, responsibilities for project conversion are divided among the Statewide Year 2000 Project Office, the Year 2000 Steering Committee, and each state agency (executive agencies,

the community college system, and universities). The Project Office, within the Information Technology Services Division (ITS) in the Department of Commerce, is responsible for statewide project management--facilitating, supporting, and monitoring the progress of state agency efforts. The Project Office prioritized systems statewide, developed the statewide conversion schedule, established the statewide risk management plan, and defined the overall conversion approach and milestones. Currently, the Project Office reports the status of statewide conversion projects, provides statewide communications and coordination, reports the status of statewide Year 2000 funding and its use, coordinates the Year 2000 budget process, updates the evolving cost estimate, and analyzes third-party product compliance and automated tool offerings. The Project Office was granted authority to approve agency projects costing less than $50,000 with funding from the Statewide Year 2000 Special Fund.

The Year 2000 Steering Committee is responsible for approving the Statewide Year 2000 Project Office plans, the scope of the Year 2000 work, and Year 2000 program policies, standards, and approaches. The Steering Committee also oversees the use of the Statewide Year 2000 Special Fund, communicates the status of Year 2000 activities, monitors the progress and performance of the Statewide Year 2000 program, and approves Year 2000 conversion projects costing more than $50,000 funded by the Statewide Year 2000 Special Fund.

TABLE 1
APPROVED CONVENIENCE CONTRACTORS

Alliance of Professionals & Consultants
Alphanumeric Systems, Inc.
Analysts International Corp.
BROADREACH Consulting
CACI, Inc.
CIBR, Inc.
CII
Complete Business Solutions, Inc.
Computer Consulting Group
Computer Horizons Corp.
COMSYS
Coopers & Lybrand, LLP
DataNet, Inc.
DB Basics, Inc.
F1 Consulting, Inc.
Global Computer Associates
IMI Systems, Inc.
ISN
Keane, Inc.
Manpower Technical
Metro Information Services
Modis
New Boston Systems
Nine Rivers Technology
OAO Corporation
Paragon Computer Professionals, Inc.
SAIC
SCB Computer Technology
Software Architects, Inc.
Southeastern Solutions, Inc.
Storage Management Solutions, Inc.
Systems & Prog. Consultants, Inc.
Tek-Solutions, Inc.
TPMC
TRW IT Services Company
Unisys
Source: Year 2000 Project Office

While the statewide Year 2000 efforts are spearheaded by the Steering Committee and the Project Office, each state agency is responsible for handling the conversion of its own systems. To fix or replace its systems, an agency may use its internal staff, supplement its staff through use of the convenience contracts (see Table 1) administered by the Information Technology Services (ITS) division within the Department of Commerce, or utilize vendors obtained through special Year 2000 conversion contracts established by the Project Office (see Table 2). To successfully manage its project, the agency should determine the business impact of system failure, establish a conversion strategy, create a contingency plan in case the conversion project fails, secure funds for the project, convert applications, perform unit and system tests for all applications, modify user procedures and train users, and conduct quality assurance reviews.

TABLE 2
APPROVED CONVERSION CONTRACTORS

COMSYS Technical Services, Inc.
OAO Corporation
Keane, Inc.
ISN
InfoSys Technologies
SVI America Corporation
FC Business Systems
CACI
Complete Business Solutions
Modis
Unisys
CIBER
CII
Nine Rivers Technology
DMR Trecom, Inc./ Amdahl Co.
Trecom, Inc. / Amdahl Co.
Source: Year 2000 Project Office

THE YEAR 2000 PROJECT OFFICE MISSION AND VISION

The Project Office's stated mission is to ensure no material impact to the State's business results from Year 2000 date failures, to use cost-effective approaches to correct the date calculations and storage formats in the State's computer systems, and to leverage the Year 2000 technology investment to the State's advantage. The State has developed a four-point plan by which the Project Office (1) facilitates and promotes immediate action, (2) supports agency efforts through funding, tool analysis, and other resources to ensure success, (3) monitors progress and status, and (4) leverages the Year 2000 investment to improve the State's business methods. These efforts fall within the ITS Division of the Department of Commerce's goals of providing technological leadership and infrastructure to support the economic, social, and intellectual development of the citizens of North Carolina.

FINANCIAL INFORMATION

Table 3 summarizes the financial data for the Project Office and Table 4 presents the financial information for the Statewide Year 2000 Special Fund that is administered by the Fiscal Section of ITS. The Project Office is funded through the normal budgetary process within the Department of Commerce with supplemental funding from the Statewide Year 2000 Special Fund. The Special Fund consists of direct appropriations from the General Assembly, funds transferred from the Highway Fund (starting in fiscal year 1998-99), and funds transferred from the SIPS Internal Service Fund.

TABLE 3
YEAR 2000 PROJECT OFFICE
FINANCIAL DATA
FY 1997-98

Revenues	$600,000
Expenditures	
Personal Services	$234,203
Purchased Services	118,819
Supplies	8,996
Property, Plant, & Equipment	174,442
Other Expenses	43,528
Transfers	26
Total Expenditures	$580,014
Excess Revenues / (Expenditures)	$19,986
Source: ITS-Fiscal Services	

TABLE 4
STATEWIDE YEAR 2000 SPECIAL FUND
SUMMARY OF FINANCIAL DATA

	FY 1996-97	FY 1997-98
REVENUES		
Transfers from ITS	$9,261,716	$0
Transfer from SIPS - Y2K	0	15,000,000
Transfer from Commerce General Fund	0	45,506,367
Reimbursement from DHHS	0	607,434
Total Revenues	$9,261,716	$61,113,801
EXPENDITURES		
Purchased Services	$758,869	$8,140,415
Supplies	0	2,112
Property, Plant, & Equipment	0	1,024,513
Intergovernmental Transfers	0	1,803,407
Total Expenditures	**$758,869**	**$10,970,447**
Excess Revenues/(Expenditures)	**$8,502,847**	**$50,143,354**
Source: ITS Monthly Budget Reports.		

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ORGANIZATION, FUNCTION, AND RESPONSIBILITIES

Objective:	*To determine the current organizational structure and identify the functions and responsibilities of the Project Office.*

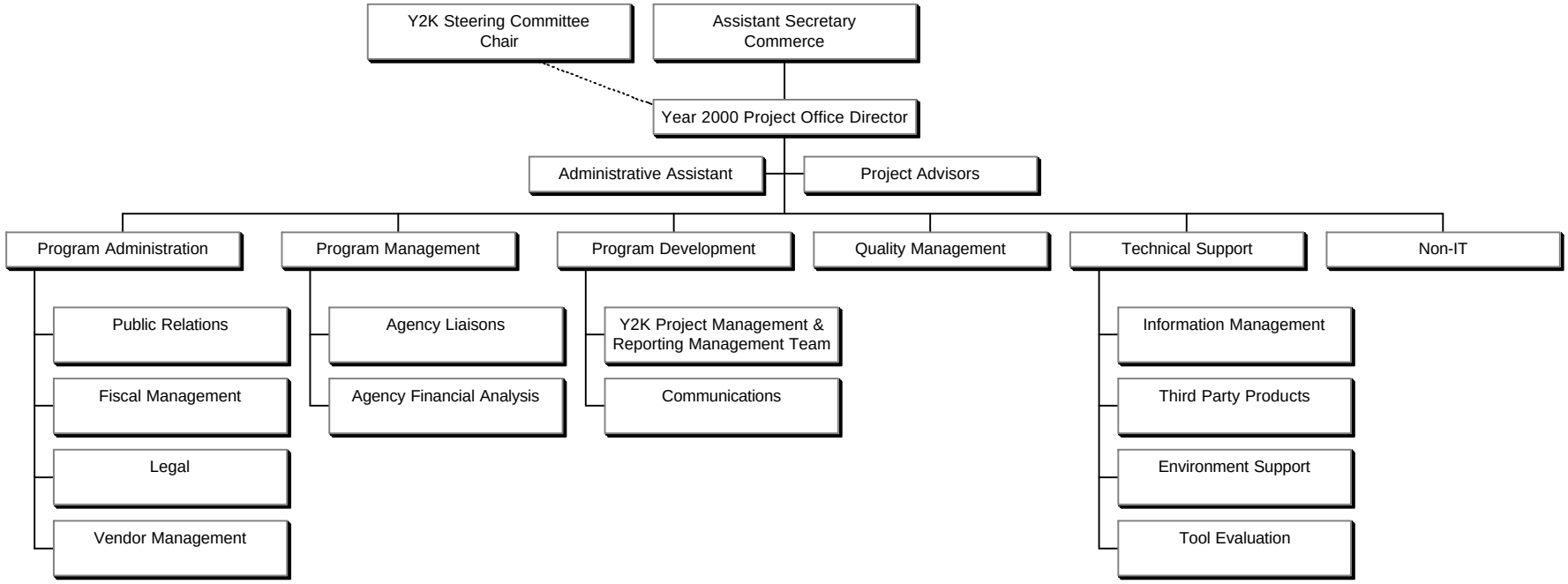
To assess the current structure and to identify the functions and responsibilities of the Project Office, we first conducted in-depth interviews with Project Office employees. We then obtained and analyzed organizational charts, reviewed job descriptions, and researched background information contained on the NC Year 2000 web site. Lastly, we compared the Project Office responsibilities to those of other states. (A detailed discussion of other states' efforts is contained on page 25.)

Exhibit 3, page 12 depicts the organizational structure in place at the beginning of the audit. The Project Office is staffed with both full-time, permanent state employees and contract employees from Andersen Consulting. While the mix of state employees to contract employees has changed over time, during the audit there were ten state employees and fourteen contract employees. Organizationally, the Project Director reports directly to the State's Chief Information Officer (the Assistant Secretary of Commerce) and functionally to the Steering Committee Chair. State employee functions include contract management, quality assurance, legal assistance, technical oversight, and office support. Contract employees act as agency liaisons communicating with the agency project leads, perform financial analyses, provide technical advice, and manage the Year 2000 web site. The Project Office has been sub-divided into six functional areas with some staff performing functions in multiple areas. Administrative support for the Project Office is provided by the Purchasing, Fiscal Services, and Personnel Services sections within the ITS division of the Department of Commerce. Below, we outline the duties and responsibilities of the functions within the Project Office.

The **Program Administration** function oversees the day-to-day management of the overall project. Included in this function are public relations, fiscal management, legal advice, human resources, vendor management, and document management tasks. The state employees within the Project Office accomplish these tasks.

Program Management involves oversight of the individual state agency projects. These functions provide the primary contact between the Project Office and the agency project leads. Agency liaisons, staffed by Andersen Consulting employees, assist the agencies with project management, and receive and process monthly status reports from the agencies. Financial analysts, also Andersen employees, compile the cost data received from the agencies to track the estimated cost and funding needs.

EXHIBIT 3
State of North Carolina Year 2000 Project Office
Organizational Chart
as of December 1998



Legend: ---- denotes functional reporting relationship

Source: Year 2000 Project Office

The **Program Development** functional area assists agencies in creating reporting mechanisms, communicates information to agencies and organizations throughout the State, and analyzes project trends. State and contract employees jointly perform these tasks.

Quality Management is responsible for monitoring both the Project Office and the state agency projects to determine that initiatives are incorporating quality control processes and working towards achieving established objectives. A state employee leads this function.

The **Technical Support** functional area provides an array of product analysis and information access services. This area evaluates tools for assisting in conversion efforts, reports on compliance of third-party products, establishes necessary environments for conversion and testing, and maintains the Project Office web site and data repository. The data repository accumulates data received from the agency projects and posts this data on internal areas within the web site to allow agencies to view comparison information. Both state employees and Andersen Consulting staff perform tasks within the Technical Support area.

The **Non-IT** function is responsible for creating methodologies for assessing and converting embedded systems. This function coordinates efforts between the agency projects and other lead agencies such as the Department of Administration, UNC Hospitals, the Department of Transportation, and the Department of Commerce. The Non-IT area is headed by an Andersen Consulting employee.

Conclusion: The organizational structure appears appropriate to oversee the management of the statewide Year 2000 project. The specified functional areas cover the necessary components of a Year 2000 project. Further, the responsibilities of the Project Office and the duties of the State agencies are clearly delineated. Therefore, we have no specific findings and recommendations relative to this objective.

CONVERSION STANDARDS

Objective: *To determine if the Project Office is following accepted Year 2000 conversion standards.*

Through interviews, inquiry, and observation, we determined the methods by which the Project Office is overseeing the Year 2000 conversion projects and the procedures that the Project Office is encouraging State agencies to use. We compared these methodologies to industry-accepted guidelines as published by the US General Accounting Office (GAO) and the Information Systems Audit and Control Association (ISACA).

Conclusion: In general, the Project Office is following and promoting effective management policies for the Year 2000 effort. The Project Office has guided agencies through all phases of the project, has published guides, tips, and procedures, and has overseen the overall project plans. We understand and acknowledge that this is a unique, dynamic, time-critical

project. As such, certain management decisions were based on the best information available at the time. However, we noted a few areas where policy or procedural changes could improve the effectiveness of the Year 2000 efforts.

THE STATEWIDE MISSION CRITICAL SYSTEM LISTING IS NOT ACCURATE.

One of the initial tasks of the Project Office was the development of a statewide inventory of applications to be converted in order to prioritize funding needs. This inventory was based upon information obtained directly from the State agencies. Agencies were requested to identify the business impact of each application by submitting data such as the volume of transactions, the number of citizens affected, and the number of businesses affected by each application. In an effort to analyze the data as objectively as possible, the Project Office utilized a computerized model. This model compiled the data into a statewide ranking. The ranking was not adjusted to correct any agency misrepresentations or to more accurately reflect the actual importance of a given application. As a result, the listing shows the College Work Study program at UNC-Pembroke as the State's number one mission critical system while the State Treasurer's system for investment accounts is ranked 552 out of 1,120 identified systems. A complete listing of mission critical systems was not compiled since the Project Office only requested data on those applications that necessitated conversion. Agencies were not asked to include systems that were considered Year 2000 compliant. Because of these factors, this listing was of limited benefit in the evaluation necessary to select systems for testing in the Independent Validation and Verification effort[2] overseen by the State Auditor.

RECOMMENDATION

The Project Office together with the Information Technology Services division should develop a comprehensive inventory of systems statewide. Emphasis should be placed on those services essential to the State as a whole, that is, those that are "mission critical. " Those applications evaluated by the Project Office and ITS as mission critical should be the focus of all Year 2000 efforts.

[2] Independent Validation and Verification (IV&V) is a process that will further test applications that have been designated as Year 2000 compliant to determine if they are technically and functionally compliant. The IV&V effort was agreed upon in a Memorandum of Understanding between the Department of Commerce and the Office of the State Auditor. At the time of this report, 106 mission critical applications had been selected for testing for Year 2000 compliance. The State Auditor selected these applications for testing based upon the impact of failure on the entity's core business functions. The State Auditor also selected vendors to perform tests on those applications. The vendors will issue an independent report on each application tested and the State Auditor will compile this information into a statewide report by September 1999 to allow agencies an opportunity to correct identified errors before their impact upon critical systems.

RESOURCE RESTRICTIONS LIMIT THE VERIFICATION OF DATA REPORTED BY AGENCIES.

General Accounting Office (GAO) guidelines recommend that Year 2000 programs be "adequately monitored." As part of its monitoring efforts, the Project Office has established procedures for agency progress reporting. Each month agencies submit progress reports to the Project Office. These reports present the number of hours worked on the project for the month and the total hours estimated for the project. The four agency liaisons compare the current month's data to amounts reported the prior month and recalculate the percentage completion based on these figures. This comparison is the only analysis performed; however, the liaisons may follow up with an agency whose data does not follow its established trend. The agency liaisons do not observe actual project work but rather rely on statements made by the agencies. Since the agencies are ultimately responsible for their conversion efforts and since Project Office resources were limited, this level of monitoring was determined to be the most cost effective approach. The IV&V effort will provide verification of approximately 10% of systems statewide. (See footnote on page 14.)

RECOMMENDATION

The Project Office should, using current resources, implement procedures to more vigorously verify progress reported by agencies. Specifically, management should develop measures to confirm that data reported is accurate. These measures could include periodic observation of work performed, assessment of completion by determining which project phase each application is in, and review of results obtained from system tests. The agency liaisons should be responsible for performing the data verification.

THE STATE HAS NOT ADEQUATELY PREPARED FOR CONVERSION OF NON-INFORMATION TECHNOLOGY (NON-IT) ASSETS.

The State began to address the Year 2000 problem by establishing the Project Office within the Department of Commerce, the agency charged with the operation of the State's information systems. However, many assets that do not initially appear to be affected by the Year 2000 problem may not work after December 31, 1999 because they contain embedded microchips. These non-IT assets include items such as building security systems, elevators, telephones, and traffic signals that generally do not fall under the agency responsible for information systems. Yet, the General Accounting Office (GAO) Year 2000 project guidelines recommend that non-IT assets be included in impact assessments. In addition, the Information Systems Audit and Control Association (ISACA) suggests that agencies identify **all** business elements that could be impacted by Y2K problems, assess the business impact, and obtain resources and funding for all elements. The Project Office prepared its initial impact assessment during 1997 and updated it periodically. However, neither the original impact assessment nor the updates included non-IT assets.

The Project Office began assessing and inventorying non-IT assets during 1998, devoting a consulting position for these efforts in September 1998 to better coordinate and facilitate the

efforts of the agencies and universities from a statewide perspective[3]. The Department of Commerce entered into a Memorandum of Understanding with the Department of Administration during November 1998 to inventory facilities (state-owned buildings) for embedded devices during early 1999. This project is slated for completion in June 1999 with some remediation efforts not anticipated to begin until after that date. Inventories of other non-IT assets have yet to be arranged. Since the assessment and inventory is incomplete, no cost estimate has been determined for these efforts. Additionally, funding for conversion of non-IT assets is not currently available from the Statewide Year 2000 Special Fund. Therefore, the lack of previous planning for these projects, as well as the potential funding problems, may cause these assets to not be converted in time to prevent failure.

RECOMMENDATION

The non-IT asset assessment and conversion should be a priority during 1999 in addition to the testing of information technology assets. The Secretary of Administration should accelerate the facility inventory in order to provide a more timely estimate of the costs to correct non-IT assets. Since funding for the conversion has not been established, an emergency appropriation may be necessary to cover the costs once they are identified. Therefore, it is critical that the status and cost estimate of non-IT assets be provided to the General Assembly as it begins budgetary deliberations.

CONTINGENCY PLANS ARE NOT BEING DEVELOPED FOR ALL SYSTEMS.

Contingency plans serve as a protection for agencies in case their projects are not completed on time or if the project does not detect all problems and a date failure occurs. GAO guidelines suggest that contingency plans be developed for critical systems during the assessment phase and be implemented during the project implementation phase. ISACA also suggests that contingency plans be created.

Currently, contingency plan development for State agencies is in its infancy. The Project Office has made agencies aware that contingency plans should be created, has emphasized the need for contingency planning as warranted by risk, and has included a suggested outline for contingency plans on its Internet web site. However, there are no requirements or mandates that contingency plans be developed. While some agencies have developed plans, others have either chosen not to or are in the process of assessing whether it is cost effective to create a plan. The Project Office has not established specific criteria for contingency plan development; rather, each agency is responsible for this determination. In addition, no procedures are in place for agencies to submit their plans to the Project Office staff for review. The Project Office questions whether it has the authority to require development and submission of contingency plans.

[3] Some agencies and universities have conducted their own non-IT assessments, and this data is available for use by the Project Office. The State Telecommunications Services section began assessment of the State's voice and data network in mid-1997, and the University of North Carolina Hospitals began assessment of medical equipment and systems in early 1997.

RECOMMENDATION

The IRMC and the Steering Committee should jointly determine the proper authority regarding contingency planning. This decision should be communicated to all agencies and the Project Office. In our opinion, the Project Office should implement procedures to ensure that all agencies develop contingency plans for at least mission critical systems. Agencies should utilize the guidelines provided on the Year 2000 web site. All agencies should submit their completed plans to the Project Office for review to ensure that the necessary components are included in the plan.

AGENCY COMPLIANCE

Objective: *To document the level of compliance of each agency as monitored by the Project Office.*

We obtained information on the progress of state agency projects from Project Office staff, monthly Steering Committee reports summarized from monthly reports submitted by agency project leads, and the State's *Fiscal Year 1997-98 Comprehensive Annual Financial Report.*

Conclusion: We cannot accurately document the level of compliance for each agency due to data verification limitations (see finding on page 15) and the lack of assurances that conversion projects will prove successful. Our concerns regarding agency compliance are noted below.

OTHER INFORMATION TECHNOLOGY PROJECTS MAY CONFLICT WITH THE YEAR 2000 CONVERSION EFFORT.

The Year 2000 project is not the only information technology project being undertaken by State agencies. Many agencies are also implementing upgrades and replacements of systems for business reasons, responding to program changes mandated by the General Assembly, the Federal Government, or the courts, and automating processes previously performed through manual operations. In addition, statewide initiatives such as the Applications Portfolio Management System and the statewide electronic mail project are being researched, piloted, and implemented. These projects are conducted through use of internal agency staff as well as contractors. Many of these same individuals may also be working on that agency's Year 2000 project. While we do not question the validity or necessity of these projects, concerns exist regarding scarcity of resources and time deadlines. In addition, some of these projects may be rendered useless if they are not compatible with the Year 2000 project or if the Year 2000 project fails.

While the Year 2000 Steering Committee and the Project Office have stressed the need for agencies to concentrate their efforts on Y2K projects, there has been no statewide mandate

requiring them to do so. Minnesota, Nevada, and New York have issued moratoriums on all information technology projects that are not directly related to the Year 2000 effort or projects that may impede progress on successful completion of the conversion. In addition, the Securities and Exchange Commission (SEC) released a policy statement to all companies required to file with the SEC announcing a moratorium on ". . . rules that require major reprogramming of computer systems . . ." to facilitate the allocation of significant time and resources to addressing the Year 2000 conversion.

RECOMMENDATION

The General Assembly should strongly consider issuing a moratorium on all new major technology projects until after January 1, 2000. The IRMC should consider passing a resolution supporting this position. Until the General Assembly has the opportunity to consider the issue, the Governor should consider issuing an executive order stating that the Year 2000 project should be the priority project in each State agency and that other information technology projects should be delayed until the agencies complete their conversion, testing, and implementation phases. Statewide initiatives should be evaluated for their impact on the workloads of agency information technology staffs. Individual agency projects should be discontinued, unless specifically required by law or Federal regulation, until the Year 2000 project is complete for a given agency. Small projects and purchases of new personal computers could proceed if it is proven that those projects do not conflict with the Year 2000 progress.

THERE ARE NO ASSURANCES THAT SYSTEMS WILL NOT FAIL AS A RESULT OF THE YEAR 2000 PROBLEM.

The Year 2000 problem is a unique situation in that the actual effects of changes to programs cannot be determined until the new century arrives. While simulations and other tests of validation can be performed, the actual date change throughout an entire system with all its interfaces cannot be replicated in advance. The potential exists that some calculations may work properly in all test scenarios but then fail in actual production. Also, it is impossible to test every component of every system due to the time constraints of the project. The Independent Validation and Verification project overseen by the State Auditor will only test 106 mission critical systems out of the inventory of 1,120 total systems within the State's ownership.

Another risk involved is that of interfaces between State government systems and those of the Federal government, local governments (cities, towns, and counties), and private enterprises. The Project Office has attempted to identify all interfaces and implemented a procedure by which all interface entities are contacted for awareness and information regarding the external party's readiness. However, the State has no control over the conversion efforts of those parties. Industry literature and the news media have documented the lack of readiness of certain Federal government programs and most local governments.

RECOMMENDATION

The Project Office should continue in its efforts of awareness, monitoring, and assistance to all parties involved. At the same time, the Project Office should explicitly publicize the fact that its efforts, as well as those of the State agencies, do not guarantee that failures will not occur with State agency systems or when State systems interface with other systems.

PAYMENTS TO VENDORS

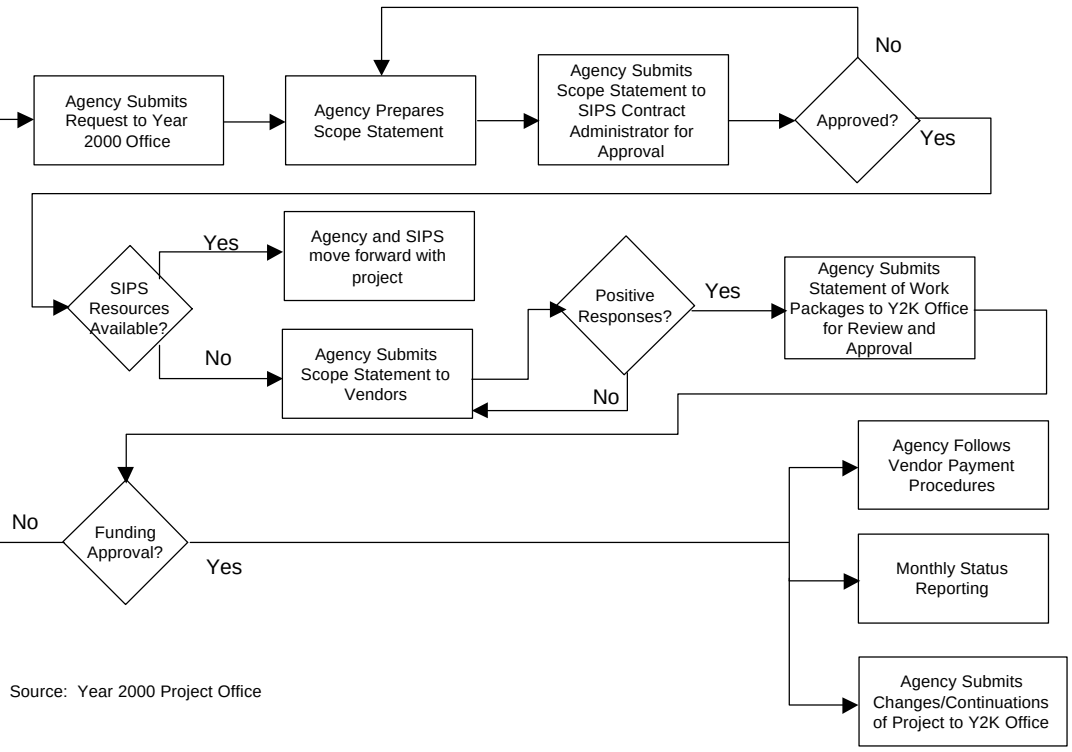
Objective: *To determine whether procedures are in place to ensure that payments to vendors are properly authorized, whether controls exist to verify that services were performed, and to determine compliance with applicable State laws and regulations.*

We documented the contract and vendor payment process. Then, we examined a sample of 121 expenditures totaling $6,946,712 from FY 1996-97, FY1997-98, and FY1998-99 (through August 1998) drawn from the Statewide Year 2000 Special Fund and the general fund for the Project Office. This sample was selected judgmentally after reviewing a complete listing of expenditures for those years. The expenditures were reviewed for adherence to internal controls, compliance with State regulations and Project Office policies, reasonableness, and necessity. Also, we examined the documentation contained in the ITS Purchasing files and Project Office contract files for compliance with state purchasing regulations and Project Office procedures for a sample of 31 approved projects.

CONTRACTING PROCESS AND PAYMENT PROCESS

If an agency determines that it can handle its conversion process using its internal technology staff with supplemental contracting staff, the normal convenience contracting procedures (as established by ITS) are followed. The agency will initiate a request to the Year 2000 Project Office. The request is followed by a scope statement that outlines the project and is submitted to the ITS Contract Administrator [the Director of Applications Development Services (ADS) within ITS] for review and approval. The Contract Administrator issues a tracking number, reviews and approves the scope statement, and notifies both the agency and the Project Office of the approval. If the ADS section has resources available to handle the request, a representative from ADS will contact the agency and develop a Statement of Work (SOW). If ADS does not have resources available, the agency will submit the approved scope statement to at least three vendors from the approved list. (See Table 1, page 8) Interested vendors will then respond by submitting a SOW with staff resumes. The agency selects from the vendors responding and forwards this information to the Contract Administrator. If the project cost exceeds $50,000, the project must be approved by the Statewide Year 2000 Steering Committee. Projects costing under $50,000 may be approved by the Project Office. The Project Office sends confirmation of approval to the agency and ITS Fiscal Services. See Exhibit 4 on the next page.

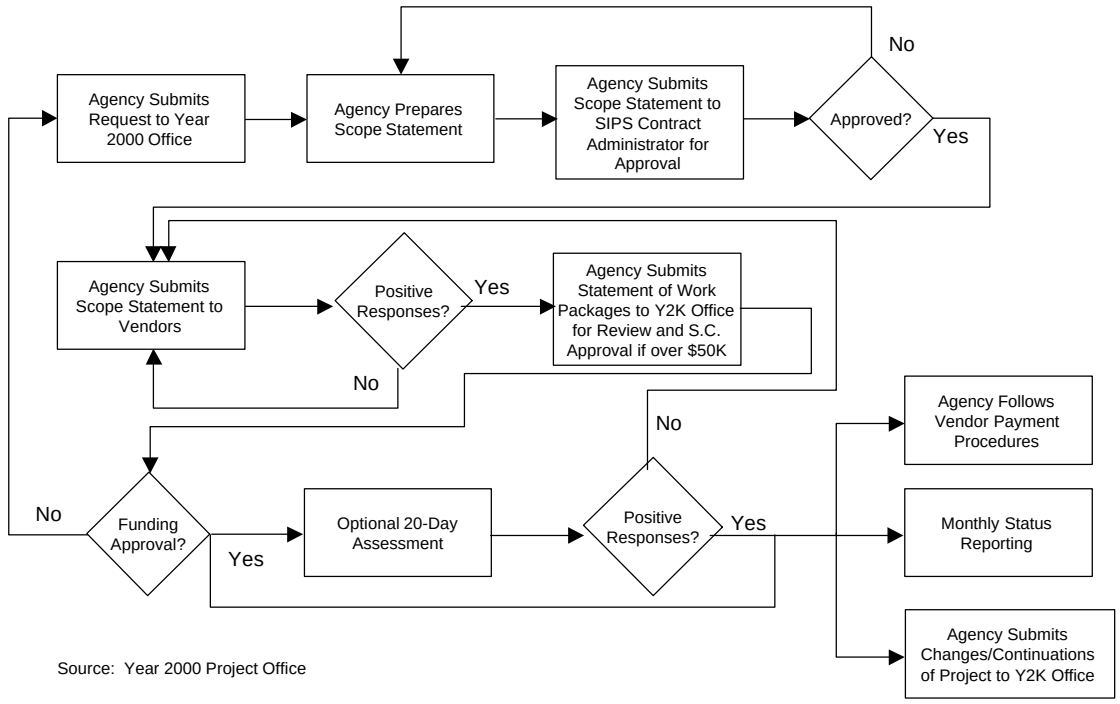
EXHIBIT 4
Convenience Contract
Processes and Procedures



Source: Year 2000 Project Office

If an agency determines that it is most efficient to use external vendors to perform its project, the conversion contract process is followed. (See Exhibit 5 on the next page.) The agency will initiate the request by preparing a scope statement that is submitted to the ITS Contract Administrator for approval. The Contract Administrator issues a tracking number, reviews and approves the scope statement, and notifies both the agency and the Project Office of the approval. Upon receipt of the approved scope statement, the agency will submit the scope statement to at least three vendors on the approved conversion contract list. (See Table 2, page 8) Interested vendors will respond by submitting a SOW to the agency. The agency selects the vendor and forwards the selection documentation to the Year 2000 Compliance Officer (the ITS Purchasing Officer). The agency sends the SOW from the selected vendor to the Project Office for review and processing. The Compliance Officer verifies that the SOW adheres to the provisions contained within the statewide conversion contract. The vendor may choose to perform a 20-day assessment to confirm the scope of the project. If the project cost exceeds $50,000, the project must be submitted to the Steering Committee for approval. Projects costing under $50,000 may be approved by the Project Office. The Project Office will send a confirmation of approval to the agency and ITS Fiscal Services

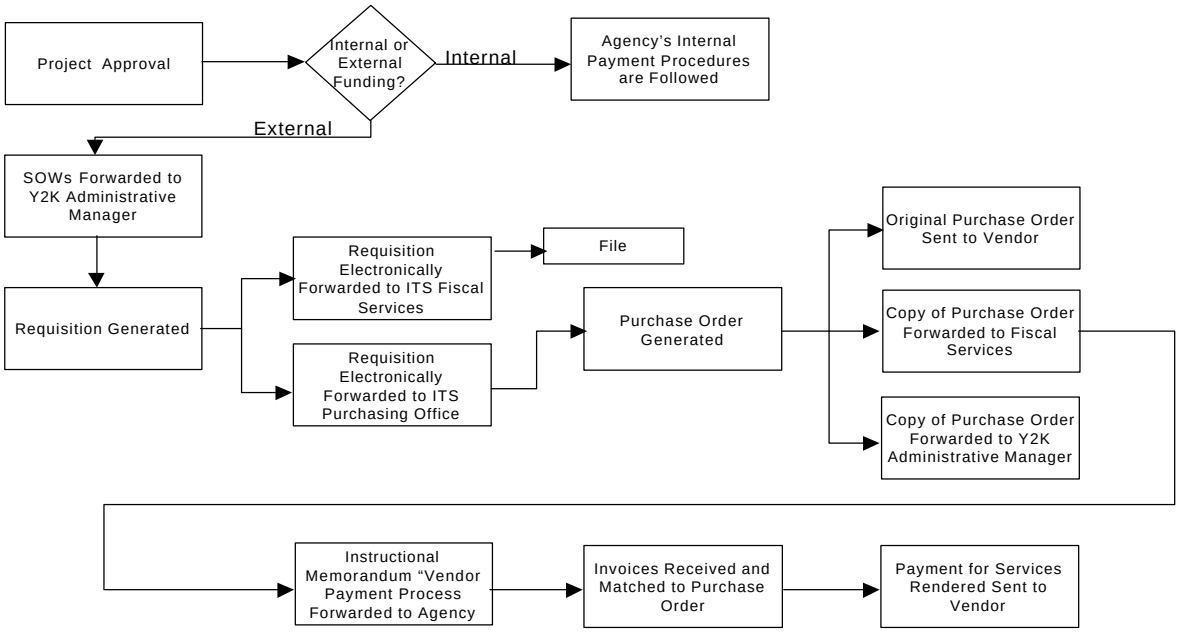
EXHIBIT 5
Conversion Contract
Processes and Procedures



Source: Year 2000 Project Office

If an agency is using its own funds for the project, the normal internal payment procedures are followed. However, those projects utilizing the Statewide Year 2000 Special Fund must adhere to the depicted process. (See Exhibit 6 on the next page.) Once the agency's Statement of Work has been approved, the Project Office generates an on-line requisition within the North Carolina Accounting System (NCAS). ITS Fiscal Services personnel review the requisition on-line for approval and assignment of accounting codes. After approval, ITS Fiscal Services forwards the requisition back to the Project Office for final approval by the Project Office Administrator. Next, the NCAS generates a purchase order that is sent to ITS Purchasing. ITS Purchasing transmits the purchase order to the applicable vendor and carbon copies to ITS Fiscal Services and the Project Office Administrator. The Project Office sends an "instructional memorandum" regarding the vendor payment process to the agency Year 2000 contact. The agency contact completes an informational form attached to the memorandum and returns it to ITS Fiscal Services to establish an account for the purchase order. Upon completion of requested work, the vendor sends an invoice and supporting documentation, such as time sheets for services provided, to the agency. A designated agency employee verifies the information and approves the invoice for payment. Then, the agency forwards the invoice to ITS Fiscal Services to generate the payment. ITS Fiscal Services reviews the invoice and supporting documentation for completeness and accuracy and proceeds to generate the check to send to the vendor.

EXHIBIT 6
Vendor Payment Procedures



Source: Year 2000 Project Office

Conclusion: The Project Office and ITS personnel have appropriately monitored the funding provided for the Year 2000 efforts. In general, the expenditures adhered to internal control policies, complied with regulations, and were reasonable and necessary. The contract files, however, did not contain the necessary documentation as explained below.

CONTRACT FILES ARE NOT ADEQUATELY MANAGED AND PURCHASE ORDERS ARE NOT PROCESSED TIMELY.

We examined the documentation contained in the ITS Purchasing files (official contract files) and the Project Office files (working copies) for compliance with State purchasing regulations and Year 2000 policies and procedures. The Year 2000 Project Office *Policies and Procedures Manual* and the *State Purchasing Manual* outline the policies for purchasing, funding requests for contracts (conversion, convenience, and sole source), approval of purchase orders, the vendor payment procedures, and the funding uses and restrictions of the Statewide Year 2000 Special Fund. To assess compliance with these policies, we selected a sample of 31 (25%) project files from a total of 122 approved projects. Inspection of these files revealed that these 31 files contained 74 approval documents (contracts and purchase orders). During review of the 74 approvals, we noted the following concerns:

- Forty-three (58%) approvals did not contain approved, signed Statements of Work.
- Two (3%) approvals did not contain purchase orders.
- Two (3%) approvals did not contain sole source justification or approval for the projects.
- One (1%) ITS purchase order file could not be located.
- Twelve (16%) approvals had purchase orders that were issued for equipment and/or facilities purchases that are specifically prohibited by Project Office policies. (These purchases were approved by the Year 2000 Steering Committee as part of the agency's overall approved project; however, no specific detailed requests were located in the file.)
- Twenty-nine (39%) purchase orders had a processing time exceeding five workdays, in violation of the verbal agreement between the Project Office and ITS Purchasing to process Year 2000 purchase orders within three work days.

ITS Purchasing and the Project Office are responsible for ensuring their personnel are aware of the requirements for reviewing and approving Statements of Work, timely processing of purchase orders, and maintaining adequate supporting documentation in the files. Additionally, the Project Office personnel are responsible for ensuring specific details for facilities and equipment requests are included as a part of the agency's funding packet for review by the Steering Committee or the Project Office.

RECOMMENDATION

The Project Office and ITS Purchasing should adhere to the policies and procedures contained in the *State Purchasing Manual* and the Year 2000 *Policies and Procedures Manual*. To alleviate potential work delays, ITS Purchasing and the Project Office should work to meet the goals agreed upon jointly.

LIABILITY

Objective: *To ascertain the liable parties and their extent of liability should any system fail despite conversion efforts.*

To ascertain liability, we examined a sample of contracts for 31 projects, noting the liability clauses contained within each contract. In addition, we reviewed the General Statutes, inquired of Project Office staff, obtained data on liability issues in other states, and determined the State's approach to liability concerns. Currently, many other states are considering legislation that offers immunity to the state from liability for Year 2000 related system failures. As of December 1998, Florida, Georgia, Nevada, North Dakota, and Virginia had passed legislation that protects these states from legal action resulting from Year 2000 computer failures. Legislation granting immunity from liability may serve as a protection against lawsuits should systems fail.

Conclusion: **Each contract with a vendor for a Year 2000 project specifically states the level of liability that the vendor accepts. The Project Office has researched liability issues and has reviewed vendor maintenance agreements for statements that may cause those vendors to be liable for changes required or errors occurring in their applications. However, at the time of the audit, the State had not addressed liability to the State for errors resulting from Year 2000 induced failures. The General Assembly should consider passing legislation that provides North Carolina immunity from liability should some Year 2000 induced failures occur.**

STATEWIDE Y2K COSTS

Objective: *To determine the amount spent throughout State government for Year 2000 projects and estimate the amount to be spent.*

We obtained reports to the Year 2000 Steering Committee, extracted budgetary reports for the Statewide Year 2000 Special Fund, and reviewed data provided in the State's *Comprehensive Annual Financial Report.* Additionally, we sought information and documentation on costs from the Project Office, ITS-Fiscal Services, the Office of State Budget and Management, and the Office of the State Controller.

Conclusion: **We were unable to determine the amount spent throughout State government for Year 2000 projects. When we attempted to compile the total amount expended to date by the State for Year 2000 projects, we found that this information was not available through the North Carolina Accounting System (NCAS). Expenditures for projects that receive Statewide Year 2000 Special Funds, as approved by the Steering Committee, are tracked by the Project Office and ITS Fiscal Services. (See Table 5) However, no statewide tracking exists for costs funded by other sources. During 1997, the Project Office recommended that a budgetary line item be established for each agency to accumulate its total costs for Year 2000 project. A statewide policy decision was made that it would be too time consuming and**

TABLE 5
EXPENDITURES FROM STATEWIDE YEAR 2000 SPECIAL FUND DURING FY 1997-98

AGENCY	EXPENDITURES
CENTRAL PIEDMONT COMMUNITY COLLEGE	$6,380
DEPARTMENT OF ADMINISTRATION	158,133
DEPARTMENT OF AGRICULTURE	48,819
DEPARTMENT OF COMMERCE	4,838,049
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES	360,070
DEPARTMENT OF HEALTH AND HUMAN SERVICES	2,889,325
DEPARTMENT OF INSURANCE	2,775
DEPARTMENT OF JUSTICE	240,715
DEPARTMENT OF LABOR	32,168
DEPARTMENT OF PUBLIC INSTRUCTION	292,081
DEPARTMENT OF REVENUE	2,383
INTRAGOVERNMENTAL TRANSFER	1,803,407
OFFICE OF THE SECRETARY OF STATE	22,388
OFFICE OF THE STATE CONTROLLER	163,113
WESTERN CAROLINA UNIVERSITY	110,641
TOTAL	$10,970,447

Source: ITS - Fiscal Services

not cost effective to capture this data at the detailed level. Therefore, amounts expended by agencies are contained within their existing data processing services accounts or within their salary accounts. As a result, the Project Office is unable to compile the total amount spent statewide on projects; rather, the Project Office reports cost estimates for the entirety of the project. The Project Office currently estimates that total expenditures for Year 2000 projects will approach $125 million as shown in Table 6 below. These estimates are based on monthly status reports provided to the Project Office by each agency.

TABLE 6
STATEWIDE COST ESTIMATES BY AGENCY
AS OF JUNE 30, 1998

Department of Administration	$1,496,254	North Carolina School of the Arts	$217,284
Department of Agriculture	486,490	North Carolina State University	2,855,032
Appalachian State University	58,182	Office of the State Controller	760,189
North Carolina State Boards	153,000	Office of State Personnel	85,490
Office of State Budget and Management	30,000	Office of State Planning	85,000
Community College System	399,397	Department of Revenue	8,083,439
Department of Commerce	1,156,009	Office of the Secretary of State	696,010
Department of Correction	10,000	UNC-Asheville	175,113
Department of Crime Control and Public Safety	262,390	NC A&T State University	999,555
Department of Environment and Natural Resources	4,781,331	UNC-Charlotte	207,200
Department of Health and Human Services	38,504,268	UNC-Chapel Hill	2,127,932
Department of Cultural Resources	60,000	UNC-Greensboro	796,661
Department of Transportation	26,728,731	UNC-General Administration	60,000
Department of Public Instruction	1,371,242	UNC Hospitals	453,125
Department of the State Treasurer	617,348	UNC-Pembroke	179,000
Elizabeth City State University	0	UNC-Wilmington	644,508
East Carolina University	1,995,245	Western Carolina University	952,309
Employment Security Commission	1,283,062	Winston-Salem State University	1,879,958
Fayetteville State University	582,121	Statewide Program Management	10,555,580
Department of Insurance	105,920	Statewide Project Technology	560,000
Department of Justice	2,739,626	SIPS Computer Usage Charges	3,597,927
Department of Labor	77,000	External IRM Quality Assurance Reviews	3,900,000
North Carolina Central University	783,277	Third Party Product Allowance	500,000
Office of the State Auditor	15,050	TOTAL	$124,067,255

Source: Project Office Statewide Scorecard and Projected Additional Funding Requirements

COMPARISON TO OTHER STATES

Objective: *To compare North Carolina's Year 2000 efforts with those of other states.*

We contacted 15 other states to obtain comparative data regarding the organization, scope, magnitude, and methodologies of their Year 2000 efforts. Of the 15 states solicited, 11 responded. Table 7, page 27 contains the results of the survey. Specific issues noted from the survey were:

- Most projects are managed within the existing information and technology resource offices.

- Nine of the 11 states use eight or fewer full-time state employees in their management/oversight function. Primarily, these employees will be retained and reassigned to other tasks after the Year 2000 project ends.
- Legislation was passed in eight states regarding the Year 2000 problem. Arizona, Arkansas, Georgia, Kentucky, Tennessee, and Texas passed legislation allotting special funds for conversion efforts. Alabama and Texas authorized salary incentive programs for employees working on Year 2000 projects. Florida and Georgia approved measures that protect the state from liability for Year 2000 induced computer errors.
- Cost estimates ranged from a low of $15 million for Tennessee to $238.2 million for Texas. Funding sources for the conversion efforts include special appropriations directly to agencies (Florida, Georgia, and Maryland), appropriations to the management/oversight organization (Arizona, Arkansas, Florida, Kentucky, Maryland, Tennessee, and Texas), and agencies' existing budget appropriations (Alabama, Arizona, Florida, Kentucky, Maryland, Mississippi, South Carolina, and Tennessee). Four states (Alabama, Arizona, Arkansas, and Kentucky) included conversion of non-IT assets (embedded chip systems) in their cost estimates.
- Ten of the 11 states responding have an approved list of Year 2000 vendors. Only five of those states (Florida, Georgia, Kentucky, Maryland, and Texas) use vendors for the management/oversight function, however. Vendors are utilized throughout all phases of the projects. These vendors are usually obtained through the normal contracting process and payments to vendors are processed through the individual agency's payment channels.
- Seven states (Alabama, Arkansas, Kentucky, Maryland, South Carolina, Tennessee, and Texas) do not hold vendors to unlimited liability for system failures. Eight states (Alabama, Florida, Kentucky, Maryland, Mississippi, South Carolina, Tennessee, and Texas) link the liability of vendors to the contractual amount of the project.
- All states responding except Mississippi require some type of status reporting from the agencies to the management/oversight team. However, only Kentucky performs tests to verify this information, Arizona and Maryland perform "audits" of this data, and Florida, Georgia, Kentucky, and Maryland rely on some type of third-party verification.
- Six states (Arizona, Arkansas, Kentucky, Maryland, South Carolina, and Texas) require contingency plans for the "critical systems," Alabama requires plans for all agencies, and Mississippi ties its contingency planning to Federal requirements.

Conclusion: **The handling of the Year 2000 efforts in the states surveyed varied. No single method emerged as the best way to handle the conversion. Overall, North Carolina's efforts are in line with what other states are doing. In some areas, North Carolina is ahead of other states. For example, North Carolina established a comprehensive Internet website that outlines guides, tips, and procedures for handling conversion efforts, initiated a special contract process for Y2K conversion efforts that received substantial vendor response, and acquired a special appropriation specifically for Y2K projects.**

TABLE 7 OTHER STATES SURVEY RESULTS												
	North Carolina	**Alabama**	**Arizona**	**Arkansas**	**Florida**	**Georgia**	**Kentucky**	**Maryland**	**Mississippi**	**South Carolina**	**Tennessee**	**Texas**
Agency/ Council/ Commis-sion:	Project Office within Dept. of Commerce-Information Technology Services/ Y2K Steering Committee	None	Government Information Technology agency	No official designee/ Each agency has its own director	Governor's Office	Statewide Y2K Project Manage-ment Office directed by the Chief Information Office	Chief Infor-mation Officer	Maryland Department of Budget and Manage-ment, Y2K Oversight Committee of the Governor's Information Technology Board	Department of Information Technology Services	Office of Information Resources	Office for Information Resources	Department of Information Resources
Employees:	24 full-time (10 state and 14 con-sultants)	4 full-time	7 full-time	30+ full-time	6.5 full-time	13 full-time (3 state and 10 con-sultants)	3 full-time	1 full-time	1 full-time	3 full-time	1 full-time	8 full-time
Do vendors provide manage-ment services?	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	No	No	No
To what extent is project oversight provided by vendors?	26-50%	N/A	N/A	26-50%	0-25%	76-100%	0-25%	76-100%	N/A	N/A	N/A	N/A
What is the status of Y2K full-time positions?	Permanent	Permanent	Permanent, Temporary, and Time-Limited	Permanent	Time-Limited	Time-Limited	Temporary	Permanent	Permanent	Permanent	Permanent	Time-Limited
What will be the status of employees/ positions at the end of Y2K project?	Reassigned	Eliminated, Reassigned	Position Reassigned	Position Reassigned	Eliminated, Terminated	Position Reassigned	Eliminated, Reassigned	Position Reassigned	Position Reassigned	Position Reassigned	Position Reassigned	Position Reassigned
Does your state have a list of approved vendors?	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

TABLE 7
OTHER STATES SURVEY RESULTS

	North Carolina	Alabama	Arizona	Arkansas	Florida	Georgia	Kentucky	Maryland	Mississippi	South Carolina	Tennessee	Texas
How many vendor contracts are approved?	52 (16 conversion, 36 convenience)	N/A	12-15	11	Do not track	47	8	24	19	6	5	39
How many vendor contracts are currently in use?	?	N/A	5-6	7	Do not track	14	6	10	3	1	5	10-15
What type of services provided by vendors to states?	Management/Oversight, Awareness, Assessment/ System Inventory, Conversion, Testing, and Implementation	N/A	Assessment/ System Inventory, Conversion, and Testing	Conversion, Testing, and Implementation	Management / Oversight, Assessment/ System Inventory, Conversion, Testing, and Implementation	Management / Oversight, Awareness, Assessment/ System Inventory, Conversion, Testing, and Implementation	Management / Oversight, Awareness, Assessment/ System Inventory, Conversion, Testing, and Implementation	Management / Oversight, Assessment/ System Inventory, Conversion, Testing, and Implementation	Assessment/ System Inventory, Conversion, Testing, and Implementation	Assessment/ System Inventory, Conversion, Testing, and Implementation	Conversion, Testing, and Implementation	Management / Oversight, Awareness, Assessment/ System Inventory, Conversion, Testing, and Implementation
How are agencies acquiring vendor services?	Special conversion contract and traditional contracting procedures	Traditional procedures and vendor contact	Traditional procedures	Traditional procedures	Traditional procedures	Traditional procedures	Traditional procedures	Traditional procedures and contract (Y2K)	Traditional procedures	Traditional procedures	Traditional procedures	Agency contact
Does state have cost estimate?	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
What is the current estimate?	$124 million	$100,000,000	$116,000,000	$35,000,000	$75,000,000 - $90,000,000	N/A	$35,000,000	$100,000,000	$19,000,000	$31,200,000	$15,000,000	$238,200,000
What factors are included in conversion cost estimates?	Hardware, software, labor, replacement, facilities and equipment for conversion and testing	Hardware, software, interface, embedded chips, labor, replacement, facilities, and equipment for conversion and testing	Hardware, software, interface, embedded chips, labor, replacement, facilities, and equipment for conversion and testing	Hardware, software, interface, embedded chips, labor, replacement, facilities, and equipment for conversion and testing	Hardware, software, interface, labor, replacement, and equipment for conversion and testing	N/A	Hardware, software, interface, embedded chips, labor, replacement, and facilities	Hardware, software, interface, labor, and replacement	Hardware, software, interface, labor, and replacement	Software, interface, labor, and equipment for conversion and testing	Software, interface, labor, and replacement	Hardware, software, interface, labor, replacement, and equipment for conversion and testing

TABLE 7
OTHER STATES SURVEY RESULTS

	North Carolina	Alabama	Arizona	Arkansas	Florida	Georgia	Kentucky	Maryland	Mississippi	South Carolina	Tennessee	Texas
What agencies are included in the conversion cost estimate?	Executive, community colleges, universities	Executive, Legislative, and Judicial	Executive	Executive, Legislative, and Judicial	Executive and Judicial	N/A	Executive	Executive and Universities	Executive, Universities, Community Colleges, and Legislative	Executive, Universities, Legislative, and Judicial	Executive, Universities, Community Colleges, Legislative, and Judicial	Executive, Universities, and Judicial
How are conversion efforts funded?	Statewide Y2K Special Fund, agencies' existing appropriations	Agencies' existing appropriations.	Appropriations to oversight administration special funds, Agencies' existing appropriations, and financed	Appropriations to oversight administration special funds	Y2K appropriations to agencies, Appropriations to oversight administration special funds, Agencies' existing appropriations, and Federal matching grant funds	Y2K appropriations to agencies	Appropriations to oversight administration special funds and Agencies' existing appropriations	Y2K appropriations to agencies, Appropriations to oversight administration special funds, and Agencies' existing appropriations	Agencies' existing appropriations	Agencies' existing appropriations	Appropriations to oversight administration special funds and Agencies' existing appropriations	Appropriations to oversight administration special funds
Do unused Y2K funds revert to the General Fund?	Yes	Yes	Yes	Yes	Yes	Don't know	No	Yes	Yes	No	No	Yes
Who has the responsibility for verification of system compliance?	Agency testing and independent validation and verification overseen by State Auditor	None	Oversight team audits and vendor verification	Oversight team audits and agency testing	Agency testing and vendor verification	Agency testing and vendor verification	Oversight team audits, agency testing, vendor verification, and other code evaluation	Oversight team audits, agency testing, and vendor verification	None	Agency testing	Agency testing and independent testing planned	None
What type of status reports does your state require of agencies?	Monthly status reports of costs and hours worked	Monthly progress reports	Mission critical systems reports	Monthly	General Progress, Monthly, Beginning in October 1998 all are quarterly	Progress status reports (% remediation completed, Cost of remediation efforts)	Quarterly status reports from Cabinet Secretaries to Chief Information Officer	Graphical Summary Chart, Mid-level feeders to all Cabinet level agencies	None at this time (If legislation passes reporting begins 1/99)	Updates to last quarterly report	Updated monthly work-plan	Monthly and quarterly progress and expenditure reports
How often must these agency reports be submitted?	Monthly	Monthly	Monthly	Monthly	Monthly and Quarterly	Bi-Weekly	Quarterly	Monthly	N/A	Quarterly	Monthly	Monthly and Quarterly

TABLE 7
OTHER STATES SURVEY RESULTS

	North Carolina	Alabama	Arizona	Arkansas	Florida	Georgia	Kentucky	Maryland	Mississippi	South Carolina	Tennessee	Texas
To whom are these reports submitted?	Project Office oversight team and presented to Y2K Steering Committee	Oversight team, Legislative agency, Governor's office, and Finance office	Technology agency	Technology agency	Oversight team	Technology agency, project oversight team, and Governor's Office	Technology agency	Oversight team	N/A	Technology agency, Legislative agency, and the Governor's office	Oversight team	Oversight team and Legislative agency
How are reports verified?	Recalculation of percentage completion	None	Audits	None	3rd party	3rd party	Testing and 3rd party	Audits and 3rd party	None	None	None	None
What are the standards/ requirements for establishing contingency plans?	N/A	All systems	System criticality	System criticality and system failure dates	10% remediation lapse	Remediation deadline of 3/99	System criticality and system failure dates	System criticality	Federal requirements	System criticality	N/A	Agency type, system criticality, and system failure dates
How are vendor payments administered?	Normal channels and through Project Office oversight team for Statewide Y2K Special Funds	Normal channels	Normal channels	Normal channels	Normal channels	Normal channels	Normal channels and project oversight team	Normal channels and project oversight team	Normal channels	Normal channels	Normal channels and project oversight team	Normal channels and project oversight team
What are the beginning date(s) for Y2K project components?	1996 - awareness 1997 - assessment, conversion 1998 - testing, implementation	1996 for all components	1995 - Awareness, Varies for all other components	1994 - Awareness, 1995- Assessment, 1996- Conversion and Testing, 1998-Implementation	1996- Awareness, 1997- Assessment and Conversion, 1998- Testing and Implementation	1996- Awareness and Assessment, varies for all other components	1994- Awareness, 1995- Assessment, 1996- Conversion, Testing, and Implementation	1995- Awareness, 1996- Assessment, 1997- Conversion, Testing, and Implementation	1996- Awareness and Assessment, 1997- Conversion and Testing, 1998- Implementation	Varies for all components	1996 for all components	1996- Awareness, 1997- Assessment and Conversion, 1998- Testing and Implementation
Are there established deadlines established for remediation components?	12/31/98 goal for conversion	No for all components	No for Awareness, Assessment, Conversion, and Testing. Yes for Implementation	No for Awareness and Assessment. Yes for Conversion, Testing, and Implementation	Yes for all components	Yes for all components	No for Awareness, Assessment, Conversion, and Testing. Yes for Implementation	Yes for all components	Yes for Awareness and Assessment. No for Conversion, Testing, and Implementation	Yes for all components for all mission critical systems	No for Awareness and Assessment. Yes for Conversion, Testing, and Implementation	No for Awareness and Assessment. Yes for Conversion, Testing, and Implementation

TABLE 7
OTHER STATES SURVEY RESULTS

	North Carolina	Alabama	Arizona	Arkansas	Florida	Georgia	Kentucky	Maryland	Mississippi	South Carolina	Tennessee	Texas
Have states passed special legislation regarding Y2K?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes
What types of special Y2K legislation did states pass?	Special funding	Status reports	Special funding and salary incentives	Special funding	Liability immunity and special Governor's authority for resource transfer	Liability immunity and special funding	Special funding	N/A	N/A	N/A	Special funding	Special funding and salary incentives
Are vendors subject to unlimited liability?	No	No	N/A	No	Yes	Yes	No	No	Yes	No	No	No
What is the level of vendor liability?	Contractual specifications	Contractually shared liability	N/A	N/A	Contract amount or system component value	Liability becomes full responsibility of vendor if legislation passes	Varies with warranties	Contract amount or $100,000, whichever is greater	Contract amount	Contract amount	Varies with contract	Contract language

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North Carolina
Department of Commerce

James B. Hunt, Jr., Governor — Rick Carlisle, Secretary

March 11, 1999

The Honorable Ralph Campbell, Jr.
State Auditor
300 North Salisbury Street
Raleigh, NC 27603-5903

Dear Mr. Campbell:

I have reviewed the findings reported in your report of the Performance Audit of the Statewide Year 2000 Project Office within the North Carolina Department of Commerce's Information Technology Services division. Attached are the written responses to each of your findings.

As you know, the Department of Commerce has assumed one of the most ambitious challenges ever faced in state government. There are many issues that must be addressed in a fixed time frame. The audit provides the Department with an independent assessment of progress made and areas where improvements may be warranted. I appreciate the level of detail and the professionalism with which your staff conducted this audit.

Richard C. Webb, Chief Information Officer and Assistant Secretary for Information Technology, will be responsible for implementing the recommendations contained in the audit. Please feel free to contact Rick or myself if you have any questions concerning the responses to this audit.

Sincerely yours,

Rick Carlisle

Enclosure

301 North Wilmington Street • P.O. Box 29571 • Raleigh, North Carolina 27626-0571
Tel: (919) 733-4962 • Fax: (919) 733-8356

The response from the Department of Commerce has been reformatted to conform with the style and format of the rest of the audit report. However, no data has been changed.

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North Carolina Department of Commerce

Information Technology Services

James B. Hunt, Jr., Governor — Rick Carlisle, Secretary

March 11, 1999

The Honorable Ralph Campbell, Jr.
State Auditor
300 North Salisbury Street
Raleigh, NC 27603-5903

Dear Mr. Campbell:

The staff of the Department of Commerce's Information Technology Services division and I have reviewed the findings reported in your report of the Performance Audit of the Statewide Year 2000 Project Office. Attached are the written responses to each of your findings.

As you know, the Year 2000 Project Office provides leadership and a focal point for the management of Year 2000 activities from a statewide perspective. The challenges imposed upon the Project Office are great, and the deadline cannot be moved. In order to assess the operations of the Project Office, we agreed that an independent performance audit would be extremely beneficial. We welcomed the formal review conducted by your office and were pleased with the professionalism exhibited by your staff.

If you have any questions concerning the responses to this audit, please feel free to contact Ms. Debra Jones, Director of the Year 2000 Project Office, or me.

Yours very truly,

Richard C. Webb

Enclosure

Richard C. Webb, Assistant Secretary for Information Technology and Chief Information Officer
P.O. Box 17209 • Raleigh, North Carolina 27609-6860
Tel: (919) 981-5555 • Fax: (919) 981-2548 • State Courier 51-01-11

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Background Information

NORTH CAROLINA'S RESPONSE

On page 7, the report states, "…the May 1997 estimate included project labor costs for application remediation while the December 1997 estimate included project technology, project facilities, production infrastructure, …"

Response: We agree with the general comments. However, we would like to note that the significant increase from May 1997 to December 1997 was in the application remediation costs and was due to the inclusion of the project technology, project facilities, and production infrastructure costs associated with this remediation.

Findings and Recommendations

ORGANIZATION, FUNCTION, AND RESPONSIBILITIES

Page 13 states, "The organizational structure appears appropriate to oversee the management of the statewide Year 2000 Project.

Response: We concur and appreciate this conclusion.

CONVERSION STANDARDS – THE STATEWIDE MISSION-CRITICAL SYSTEM LISTING IS NOT ACCURATE

On page 14, the finding states, "The statewide mission-critical system listing is not accurate." The first sentence of the finding states, "One of the initial tasks of the Project Office was development of a statewide inventory of applications to be converted in order to prioritize funding needs."

Response: The Project Office generated a statewide priority listing of application systems to assist the Steering Committee in the event of insufficient resource availability. This listing did not constitute a system by system "ranking." It was intended to be used to "classify" systems into High, Medium, and Low tiers based on objective business impact data submitted by each agency (i.e. number of citizens affected, number of businesses affected, total revenue, total expenditures, etc.). The Project Office used the High, Medium and Low classifications coupled with the total work effort to assign each system a priority of 1 through 4.

The Project Office requested that each agency supply complete and accurate business impact data. Some agencies / universities did a more comprehensive job of completing this information (e.g. UNC-Pembroke) than others. Once the priority listing was produced, the Project Office shared the generated list with the agencies and asked if they had any concerns about the priority assignments of any systems. Several agencies submitted adjustments to their business impact data accordingly.

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During the course of the audit review, the Project Office supplied the audit team with several working documents. These documents included the raw data submitted by the agencies prior to the final priority classification. All published priority listings are grouped by priority class and sorted by Agency and System name.

CONVERSION STANDARDS - RESOURCE RESTRICTIONS LIMIT THE VERIFICATION OF DATA REPORTED BY AGENCIES

On page 15, the report states, "The agency liaisons do not observe actual project work but rather rely on statements made by the agencies. Since agencies are ultimately responsible for their conversion efforts and since Project Office resources were limited, this level of monitoring was determined to be the most cost-effective approach."

Response: We concur with the finding and the recommendation. The Project Office would like to note, however, that we carefully analyze the type of information we request from the agencies in an effort to improve the reliability and verifiability. For example, rather than ask agency Year 2000 Coordinators to supply us with the agency's percentage of readiness (a subjective assessment), the Project Office requires the agency to submit monthly status reports that contain the number of hours worked and the estimated hours needed for completion. These numbers are then used to calculate the percent complete for the system, the agency, and the State. The numbers submitted are reviewed each month for consistency and reasonableness, and compared with those reported during the previous month.

CONVERSION STANDARDS - THE STATE HAS NOT ADEQUATELY PREPARED FOR CONVERSION OF NON-INFORMATION TECHNOLOGY (NON-IT) ASSETS

Response: We concur. The Project Office is currently compiling status information and a high level estimate of the statewide non-application costs and will continue to address non-IT asset assessments and conversion efforts during 1999.

CONVERSION STANDARDS – CONTINGENCY PLANS ARE NOT BEING DEVELOPED FOR ALL SYSTEMS

On page 16, the report states, "Currently, contingency plan development for state agencies is in its infancy. The Project Office has made agencies aware that contingency plans should be created, has emphasized the need for contingency planning as warranted by risk, and has included a suggested outline for contingency plans on its Internet site…..The Project Office has not established specific criteria for contingency plan development; rather, each agency is responsible for this determination."

Response: Contingency planning is a resource intensive process and the Project Office has advised contingency planning only in cases where the risk warrants. In 1998 and 1999, the Project Office embarked on an aggressive campaign to make agencies and

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universities more aware of all Year 2000 related risks (interface partner failures, third party product failures, etc.) and the need for business continuity plans.

We concur that contingency planning is still a relatively new process for many agencies. The criteria for development of business continuity and contingency plans was further defined at the most recent Steering Committee Meeting (February 22, 1999).

AGENCY COMPLIANCE – OTHER INFORMATION TECHNOLOGY PROJECTS MAY CONFLICT WITH THE YEAR 2000 CONVERSION EFFORT

On page 17, the report states, "The Year 2000 project is not the only information technology project being undertaken by State agencies. Many agencies are also implementing upgrades and replacements of systems for business reasons, responding to program changes mandated by the General Assembly, the Federal Government, or the courts, and automating processes previously performed through manual operations……Minnesota, Nevada, and New York have issued moratoriums on all information technology projects that are not directly tied to the Year 2000 effort or projects that may impede progress on successful completion of the conversion."

Response: We concur.

AGENCY COMPLIANCE – THERE ARE NO ASSURANCES THAT SYSTEMS WILL NOT FAIL AS A RESULT OF THE YEAR 2000 PROBLEM

Response: We concur with your assessment of this risk. The statewide goal is to have no "material" disruption to governmental services. However, achieving our goal is dependent upon three major elements: (1) The State's application systems must be ready and our known risks in the embedded chip areas must be addressed; (2) Our critical suppliers must be ready (e.g. utilities, transportation, vendors, small businesses, etc.); and (3) Our interface partners must be ready (e.g. federal government, local government, private sector, etc.). The Project Office believes that the State's application systems will be ready. We do, however, anticipate some failures with minor to no disruption in services. The Project Office has requested that agencies and universities assess risks in all areas and determine the need for contingency plans.

PAYMENTS TO VENDORS – CONTRACT FILES ARE NOT ADEQUATELY MANAGED AND PURCHASE ORDERS ARE NOT PROCESSED TIMELY

Response: Based on the Auditor's Office and Project Office review, there were a small number of files that contained Statements of Work without the Compliance Officer / Convenience Contract Administrator's signatures. However, these Statements of Work did contain both the vendor's and the agency representative's signatures. It should be noted that the Compliance Office / Convenience Contract Administrator's

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signatures were obtained prior to the end of the fieldwork phase of the performance audit.

All issues raised by the Auditor's Office have been resolved. The Project Office and ITS Purchasing are currently working closely to ensure compliance with policies and procedures in the State Purchasing Manual and the Year 2000 Project Office Policies and Procedures. However, ensuring compliance sometimes causes processing delays due to sole source justification and verification of funds availability. The Project Office has implemented a tracking system to ensure that purchase orders are processed efficiently.

LIABILITY

Response: The Project Office concurs with the proposed conclusion. The Project Office added a full time legal resource in August of 1998. Additionally, we have initiated numerous discussions with various policy-making bodies to address this issue.

STATEWIDE Y2K COSTS

On page 24, the report states, "no statewide tracking exists for costs funded by other sources. During 1997, the Project Office recommended that a budgetary line item be established for each agency to accumulate its total costs for Year 2000 project. A state-wide policy decision was made that it would be too time consuming and not cost effective to capture this data at the detailed level."

Response: The Project Office concurs with this conclusion. The Project Office presented various alternatives to track statewide Year 2000 costs. This would have enabled the State to accumulate the total cost of Year 2000 expenditures.

COMPARISON TO OTHER STATES

Response: The Project Office concurs with the proposed conclusion. One of the largest issues in reporting and tracking status has been the lack of standard term definitions and project metrics.

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March 18, 1999
Public Release Date

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