STATE OF
NORTH CAROLINA

Special Report

YEAR 2000
INDEPENDENT VERIFICATION
AND VALIDATION REPORT

ON MISSION CRITICAL COMPUTER APPLICATIONS

OFFICE OF THE STATE AUDITOR
RALPH CAMPBELL, JR.
STATE AUDITOR

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Ralph Campbell, Jr.
State Auditor

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In conducting these duties and responsibilities, the State Auditor is committed to thorough audits and examinations performed by a professional staff which result in useful and practical recommendations to improve services provided by North Carolina state government. Further, the State Auditor is committed to promoting cooperative efforts with those agencies and institutions under his statutory oversight.

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Office of the State Auditor

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November 15, 1999

The Honorable James B. Hunt, Jr., Governor
Members of the North Carolina General Assembly
North Carolina Department/Agency Heads
Citizens of the State of North Carolina

Ladies and Gentlemen:

We are pleased to submit this special report entitled *Year 2000 Independent Verification and Validation Report on Mission Critical Computer Applications*. The objective of this project was to use independent resources to provide an additional level of assurance that the most mission critical computer applications for the State of North Carolina will be year 2000 (Y2K) ready at the turn of the century.

This report includes the results of independent verification and validation (IV&V) of 112 of the State's 126 mission critical computer applications. The IV&V results for the remaining 14 mission critical applications will be included in a supplemental report in December 1999. This report consists of an executive summary, project background, scope, approach, vendor selection, a summary of the results by department, and the results of the individual application assessments organized by department.

Detailed reports for each computer application reviewed were sent to the responsible department heads as they were completed to allow the departments sufficient time to address any application deficiencies found. For all applications in which deficiencies were found, the departments have submitted corrective action plans to address the deficiencies. The Office of the State Auditor has received verbal confirmation from most of the departments that they have implemented the action plans submitted. However, due to time limitations we did not confirm that these action plans have been implemented for each application. It is the department's responsibility to ensure that the action plans submitted have been fully implemented.

We wish to express our appreciation to the Y2K Project Office personnel, the heads of the state departments, and their staffs for the courtesy, cooperation, and assistance provided to us during this very important project.

Respectfully submitted,

Ralph Campbell, Jr.

Ralph Campbell, Jr.
State Auditor

cc: Year 2000 Project Office

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EXECUTIVE SUMMARY

The State of North Carolina plans to spend an estimated $131 million to repair or "remediate" and test the State's computer applications so that they properly process dates before and after the year 2000 and between the twentieth and twenty-first centuries. As part of the State of North Carolina's overall approach to address the Year 2000 problem, the Department of Commerce Year 2000 Project Office approached State Auditor Ralph Campbell, Jr. and requested that his Office conduct an Independent Verification and Validation (IV&V) project. The purpose of this project was to provide an additional level of assurance that the State's most mission critical computer applications would be year 2000 (Y2K) ready at the turn of the century. The State of North Carolina has demonstrated leadership with respect to this approach by being the only state that has performed Year 2000 Independent Verification and Validation on such a broad scale.

The scope of this project included performing independent verification and validation of the State's 126 most mission critical computer applications. These mission critical applications were identified through discussions with key business and information systems personnel in thirty-eight of the State's departments (agencies, departments, offices, and universities) and through application of specified evaluation criteria. Twenty of the 126 mission critical applications were excluded from our scope because the departments responsible for the applications already had plans to conduct an independent verification and validation project on these applications. However, we are including the results of their results in our report to present a more comprehensive picture of our State's Y2K readiness. Fourteen of the mission critical applications were not ready for IV&V in time to be included in this report. The Office of the State Auditor (OSA) will conduct IV&V on these applications as they become available and will report the results to the responsible departments to ensure they have time to make corrections to any errors found. In addition, we will report a summary of the results for all fourteen of these applications in a supplemental Y2K IV&V report in December 1999.

The primary approach used by OSA for this project relied heavily on automated code assessment of the computer application source code to detect year 2000 errors. Doing so ensured thorough analysis of the application while reducing the need for significant support from the application's subject matter experts and minimizing both the high expenses and long timelines associated with functional testing. In a few cases the application source code was not available for conducting an automated code scan, but a suitable test environment was available. For these few applications, OSA conducted functional testing to assess the Y2K Readiness of the application. For all applications that went through automated code assessment or functional testing, OSA rendered one of three opinions for the application: Y2K Ready, Y2K Ready with minor modifications, or Not Y2K Ready. These opinions were objectively driven by defined criteria involving the number of application errors found under each of the following categories: Emergency, High, Medium, or Low.

In some situations it was not possible to utilize the primary Y2K IV&V approach because the State did not have access to the application source code or a suitable test environment. For these applications, OSA used an alternate approach to complete the Y2K assessment. The alternate approach was to conduct a due diligence assessment to ensure that reasonable and prudent measures had been taken to ensure the Y2K readiness of the application. For these assessments, applications received one of the following opinions: Due Diligence Fully Demonstrated, Due Diligence Moderately Demonstrated, or Due Diligence Not Demonstrated. These opinions were driven by an assessment of the following: the application vendor Y2K Readiness statements, the application remediation approach, testing activities used to ensure the application is Year 2000 Ready, and the Y2K readiness of the application hardware, operating system, and associated software.

Using the methodology described in the previous two paragraphs has saved the State an estimated $15 million because it leverages the use of automated source code assessment rather than relying on human resources to manually test each application. The approach is flexible enough to allow for functional testing or a due diligence assessment when code scanning was not feasible.

The Y2K IV&V report for each mission critical application was edited and approved by OSA, issued to the head of the department, and copied to the Y2K Project Office immediately after the completion of the assessment. This approach allowed the departments the opportunity to take immediate action on the errors found and bring the application into a Y2K ready condition as soon as possible. The Executive Summary section of the report was also sent to the Governor and all members of the General Assembly. If the Y2K readiness opinion on the application was any opinion other than "Y2K Ready" or "Due Diligence Fully Demonstrated," the OSA requested that the department submit a corrective action plan to the Y2K Project Office and send a copy of the action plan to OSA.

To provide the necessary resources for a project of this magnitude, OSA procured the services of eight Y2K IV&V vendors. In addition, OSA procured the services of a project manager from an independent vendor to manage the day to day activities of the project. All of these resources operated under the professional management oversight of the Office of the State Auditor.

Below is a summary of the statewide results of the Y2K IV&V assessments. The table below lists each of these Y2K readiness opinions and the number of applications that received that Y2K readiness opinion.

Type of Y2K Readiness Assessment						Total Applications Reviewed for State
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
74	19	9	8	2	0	112

In most cases, departments have already taken corrective action on applications that received any opinion other than "Y2K Ready" or "Due Diligence Fully Demonstrated." In a few

cases, departments have submitted corrective action plans but have not yet implemented them. However, the departments will implement their action plans before the year 2000. Therefore, the state departments report that all of these 112 mission critical computer applications will be Y2K Ready at the turn of the century. It should be noted that due to time limitations OSA did not confirm that these action plans have been implemented for each application. It is the department's responsibility to confirm that the action plans submitted have been fully implemented.

Aside from the obvious benefits that this project has provided to the State of North Carolina, we noted some secondary benefits that we believe are worth mentioning. First, this project has enabled us to prepare a much more complete and comprehensive list of mission critical computer applications for the State of North Carolina. In addition, by interviewing key business and technical personnel to identify the most mission critical applications in each department, the department leadership grew more familiar with the information technology and systems that support their core business functions. Finally, in most cases our IV&V projects left very valuable byproducts with department personnel that improved the functional and technical documentation for the system that was reviewed. These tools may be reused in the departments for training and analysis purposes both now and in the future.

While this office is proud of the value added by this project we are cautious in our celebration. The scope of this project encompassed 126 of the State's 1120+ computer applications. We believe that we have significantly improved the chances that these mission critical applications are Y2K compliant, but no analysis or remediation activity can provide a 100% assurance that an application will not experience some problems in the year 2000. However, we believe we have provided a high level of assurance at a reasonable cost to the State and believe further analysis would bear little fruit in comparison to the dollars required to do it.

BACKGROUND

The Year 2000 (Y2K) computer bug has presented an extraordinary challenge to industry, governments, and citizens throughout the industrialized world. According to Gartner Group, more than 600 billion dollars will be expended worldwide to repair or "remediate" computer applications so that they properly process dates before and after the year 2000 and between the twentieth and twenty-first centuries.[1] The State of North Carolina plans to spend a total of $131 million on its Y2K remediation and testing.

The State of North Carolina began proactively addressing the Y2K computer bug as early as 1995, and in late 1996 the State established the Year 2000 Project Office to begin addressing the problem at a statewide level. In mid - 1997 the Secretary of Commerce established the statewide Year 2000 Steering Committee to oversee the assessment of the Y2K impact on the State. Additionally, this committee was responsible for the identification and implementation of solutions to the Y2K computer bug for state computer applications. The Steering Committee was made up of a cross-section of the State's leaders from various agencies, offices, and universities. With the formation of the Year 2000 Steering Committee, the Year 2000 Project Office became the staff support for the direction established by the Year 2000 Steering Committee and was responsible for the day-to-day activities associated with the statewide effort. The director of the Year 2000 Project Office reported directly to the State's Chief Information Officer, and the project was staffed with state employees and contract resources. In addition, state agencies, offices, and universities appointed a Year 2000 coordinator to address the Y2K concerns within their respective organizations and to act as a liaison between the organization and the Year 2000 Project Office.

While the state remained confident in the established sponsorship, organization, and approach chosen to address the Y2K issue, the Year 2000 Project Office recognized the need for an additional level of assurance that the State's most mission critical computer applications would be Y2K ready at the turn of the century. In response to this need, the Department of Commerce requested that the Office of the State Auditor lead an independent verification and validation (IV&V) effort of the Y2K readiness of the State's most mission critical computer applications. Independent verification and validation for Year 2000 compliance is a process whereby independent professionals confirm by examination, collection of objective evidence, and testing, that applications are capable of processing data correctly at the turn of the millennium and beyond.

On August 4, 1998, Lt. Governor Dennis Wicker, State Auditor Ralph Campbell, Commerce Secretary Rick Carlisle, and Chief Information Officer Rick Webb signed a Memorandum of Understanding (MOU) that defined the roles and responsibilities in assessing the Y2K readiness

[1] CNET Y2K web site at http://www.cnet.com/Content/Reports/Special/Y2000/, "The High Price of Y2K."

of the State's mission critical applications. The signing of this MOU was intended to accomplish the following:

- Significantly improve the possibility of compliant information systems through timely independent verification and validation (IV&V)
- Eliminate the potential for duplication of effort
- Ensure the independence, technical expertise, integrity and credibility demanded by citizens of North Carolina.

The MOU established that the Office of the State Auditor (OSA) and the Department of Commerce/Information Technology Services (ITS) would jointly develop specifications to retain the professional services necessary to independently verify and validate the Y2K readiness of the State's mission critical applications. The MOU further established that work performed by the IV&V vendors would be complimented by the oversight of OSA's professional audit personnel and management staff, and the funding for the contract professional services would be provided by ITS from the Year 2000 Special Fund. The State of North Carolina has demonstrated leadership with respect to this approach by being the only state that has performed Year 2000 Independent Verification and Validation on such a broad scale.

PROJECT SCOPE

In order to properly direct the IV&V resources, the Office of the State Auditor identified the State's "mission critical" applications by conducting an initial assessment of the State's 1100+ computer applications. Beginning with a list of all the computer applications from each state department (agency, department, office, or university), OSA interviewed key business and information systems personnel at 38 of the state departments to narrow the project scope to the State's most mission critical applications. Considerations used to determine which applications were the most mission critical included the following:

Considerations for Inclusion:

- Applications that were most closely aligned with the Department's core functions.

- Applications that would have a devastating impact on the Department's operations if the application failed and remained down for 3 months or more.

Considerations for Exclusion:

- Applications with proven manual work-arounds or alternate processing options were excluded from our scope.

- Commercial Off the Shelf (COTS) applications were considered lower risk because of the vendor's liability to remediate the software packages. However, we still included some COTS packages within our scope if they were clearly mission critical.

The department interviews resulted in narrowing the project scope to 132 mission critical applications at 29 North Carolina departments. Six applications were later removed from our list because the applications were either replaced by the agency with other applications, or because the applications were actually already covered under the IV&V of another identified mission critical application. *(See Appendix A for a listing the six applications removed and the justification for removal.)* This left us with 126 mission critical applications for the State of North Carolina. *(See Appendix B for a listing of the 126 mission critical computer applications.)*

Of the 126 mission critical applications, fourteen applications at the Department of Justice and four applications at the Department of Revenue were already being tested independently by outside vendors and were excluded from our scope to eliminate a duplication of effort. The vendor testing these applications was an approved Y2K IV&V vendor. To present a more comprehensive picture of our state's Y2K readiness, we have included the results of these assessments in this report.

The General Assembly in the Legislative Branch also elected to perform IV&V of two mission critical applications through an independent vendor. However, the testing of these

applications was delayed until after the end of the legislative session. *(See Appendix C for a list of the mission critical applications that are being IV&Ved by individual department contract resources.)*

Of the 126 mission critical applications included in the overall IV&V scope, fourteen (including the two General Assembly applications) were not ready in time for us to complete the IV&V and include them in this statewide IV&V report. Therefore, this report includes the results of the IV&V of 112 mission critical computer applications. We will report the results of the IV&V on the remaining fourteen applications in the fourth quarter 1999. *(See list of applications deferred to the Second Round of IV&V at Appendix D.)* Of course we will communicate the results of these assessments to the departments as soon as possible to ensure they have adequate time to complete any additional remediation that might be necessary.

PROJECT APPROACH

CHOOSING AN APPROACH

Numerous approaches exist for conducting Y2K IV&V. The simplest approach involves auditing the process used to do testing of the remediated applications to ensure that the process is sufficient to provide a degree of assurance that the application is Y2K ready. This approach does not involve any testing of the application and, therefore, does not offer a high degree of assurance. A more exhaustive approach may involve full scale regression testing of the applications by an independent party after the applications have been remediated and tested by the local IT shop or by a contract remediation vendor. This approach can be very time consuming and quite expensive.

The State of North Carolina Office of the State Auditor initially chose a Y2K IV&V approach that incorporated both automated code assessment and functional testing of mission critical computer applications. To validate the approach, the OSA project team initiated eight pilot Y2K IV&V projects in late 1998 (one with each Y2K IV&V vendor). During the course of the pilot projects, OSA realized that the functional testing part of this approach was requiring a higher degree of department subject matter expert support, a much greater amount of time for testing, and significantly more funding to support manual vendor testing resources.

Applying the lessons learned from the pilot projects, the Office of the State Auditor refined our Y2K IV&V approach to place less reliance on functional testing and to rely more heavily on leveraging automated tools. Doing so ensured thorough analysis of the application source code while reducing the need for significant support from the application's subject matter experts and minimizing both the high expenses and long timelines associated with functional testing. This approach is flexible in that it allows for functional testing of the application if needed. The approach includes management decision points throughout to ensure the State analyzes and tests the application only to the level necessary to provide reasonable assurance that the application is Y2K ready. This approach has proven to be very effective and efficient, providing a high degree of assurance at a reasonable cost to the State. Refining the methodology as we did saved the State an estimated $15 million by leveraging the use of automated source code assessment rather than relying on human resources to manually test the application.

PRIMARY Y2K IV&V PROCESS

The refined Y2K IV&V approach, conducting a source code scan and completing functional testing if needed, was used for all mission critical applications maintained by the State and for all vendor-provided applications for which the State had access to application source code.

To ensure the least amount of disruption to the department personnel, OSA assigned one Y2K IV&V vendor to each department when possible. *(See Appendix E for a list of Y2K IV&V vendors with contact information.)* Vendors worked with the department personnel to schedule the IV&V activities for each of the mission critical computer applications within our scope. For each application, the vendor conducted an initial assessment of the application to develop a statement of work, which included a project plan and a not-to-exceed cost estimate. Once the OSA approved the statement of work, the vendor completed both a code analysis phase and a functional analysis phase.

The purpose of the **code analysis** was to run the application source code through an automated code analysis tool to identify any errors associated with handling dates affected by the year 2000. The purpose of the **functional analysis** was to identify the core functionality delivered by the application. Once the code analysis was complete, the vendor reviewed the resulting errors to see if any had an impact on the core functions identified in the functional analysis. Vendors were asked to identify the specific business impact that each of the errors would have on the application if not corrected. Once the impact was determined, errors were ranked into one of the following impact severity categories:

Emergency – Errors that cause a stoppage in IV&V testing are classified as "Emergency." Emergency is a different type of error than the other errors and is not really higher than a "High" impact error. Emergency errors are usually fixed, and then the testing is re-run before the course of the IV&V is over. Therefore, Emergency errors probably will have no effect on the opinion of Y2K Readiness of the application since they have been corrected and retested during the IV&V.

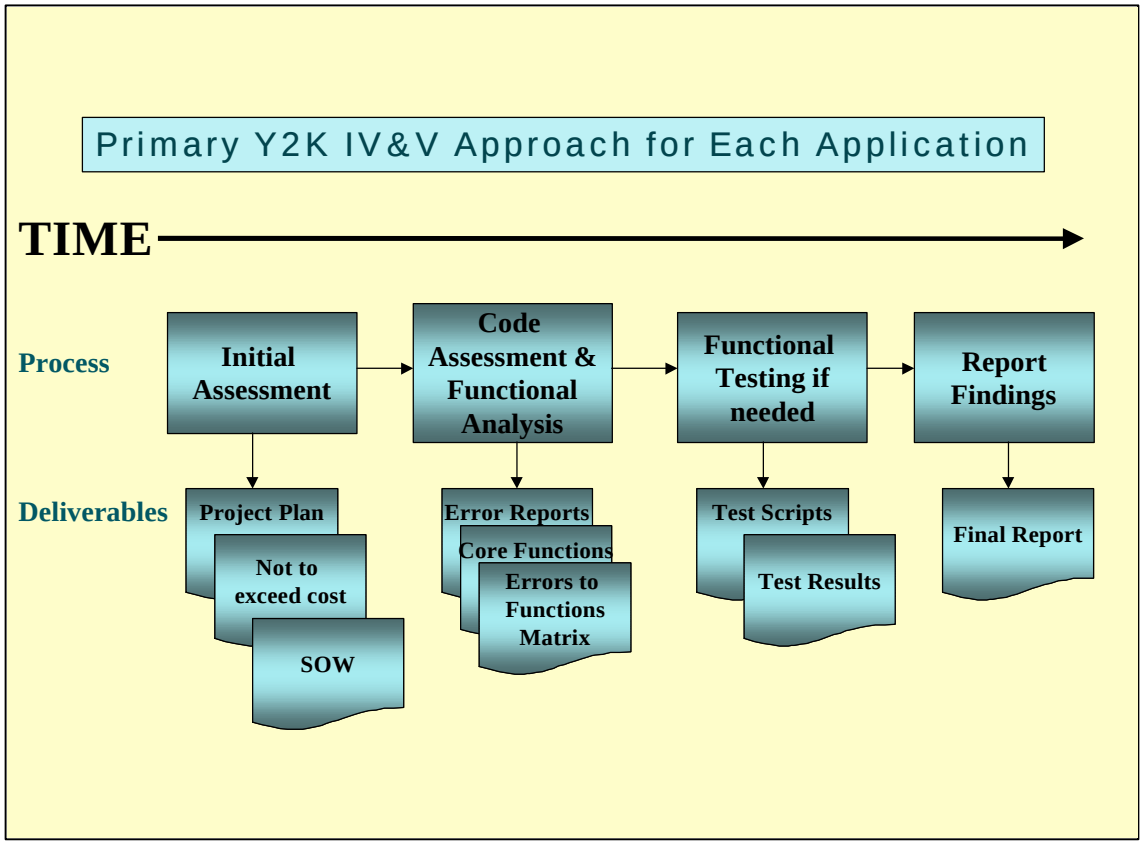
High - Errors that have significant functional impact on the application are classified as "High." These errors, if not corrected, would cause business interruption and/or corruption of mission critical data in the application. Also, errors that are highly visible and potentially embarrassing to the State may be classified as High.

Medium - Errors that have functional impact on an application but do not meet the criteria to be classified as “High” are classified as "Medium." This will be the classification most commonly used for errors that impact functionality in a less than severe manner. This type error must be fixed to ensure it does not adversely impact application functionality in the year 2000 and beyond.

Low - Any errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports) or have a very minor impact should be classified as "Low."

No Impact – Items that are initially flagged as errors during code scanning or initial assessment that are later found to have no real functional impact on the application are classified as “No Impact.”

Once all errors had been ranked, OSA worked with the vendor and the department to determine whether or not functional testing would be required to further assess the Y2K readiness of the application. Functional testing was only executed for applications with errors having significant impact on core functionality.



After the Y2K IV&V vendors identified any application errors and had assigned an error classification, OSA met with the vendor and the department to discuss the results of the IV&V. The purpose of this meeting was to discuss each of the errors and agree on the classification of each error. Once all parties agreed on the classification of each error, the overall Y2K readiness opinion could be determined by the number of errors found in each error classification. Using this information, the vendor developed the Y2K IV&V final report for the application under review.

Applications received one of the following opinions:

- **Y2K Ready:** Applications with no errors, only "low" impact errors, or with both "low" and "emergency" errors (assuming the emergency errors have been corrected and retested).

- **Y2K Ready with minor modifications:** Applications with any "Medium" impact errors but no "High" impact errors.

- **Not Y2K Ready:** Applications with any "High" impact errors.

ALTERNATE Y2K IV&V PROCESS

In some situations it was not possible to utilize the primary Y2K IV&V approach because the State did not have access to the application source code or a suitable test environment. For these applications, OSA used an alternate approach to complete the Y2K assessment. The alternate approach was to conduct a due diligence assessment to ensure that reasonable and prudent measures had been taken to ensure the Y2K readiness of the application. For these assessments, applications received one of the following opinions:

Due Diligence Fully Demonstrated: The application vendor has fully documented and demonstrated reasonable and prudent measures to ensure Y2K compliance.

Due Diligence Moderately Demonstrated: The application vendor has documented and demonstrated some reasonable and prudent measures to ensure Y2K compliance.

Due Diligence Not Demonstrated: The application vendor has not documented nor demonstrated reasonable and prudent measures to ensure Y2K compliance.

This alternate approach generally involved review of application vendor Y2K Readiness statements, an assessment of the application remediation approach, and an assessment of the testing activities used to ensure the application is Year 2000 ready. The approach also included a review of application computer hardware and operating systems to ensure the vendor had proposed a reasonable approach to ensure Y2K readiness.

REPORTING PROCESS

Each report was edited and approved by OSA and issued to the head of the department and copied to the Y2K Project Office immediately after the completion of the assessment. This approach allowed the department the opportunity to take immediate action on the errors found to bring the application into a Y2K ready condition as soon as possible. The Executive Summary section of the report was also sent to the Governor and all members of the General Assembly. If the Y2K readiness opinion on the application was any opinion other than "Y2K Ready" or "Due Diligence Fully Demonstrated," the OSA requested that the department submit a corrective action plan to the Y2K Project Office and send a copy of the action plan to OSA.

IV&V VENDOR SELECTION

The Office of the State Auditor worked with the Department of Commerce's Y2K Project Office to develop a Request for Proposal (RFP) for procuring Independent Verification and Validation (IV&V) services for year 2000 readiness of the State's most mission critical computer applications.

Nine vendors responded to the RFP, and after evaluation of each vendor's credentials, all nine were accepted as eligible vendors to provide Y2K IV&V services. One of the nine vendors eventually decided to forgo working with the State on this project because they were not comfortable with the unlimited liability clause in the contract. The remaining eight Y2K IV&V vendors provided the primary staffing for the Y2K IV&V project. (See Exhibit 1 for a list of the approved Y2K IV&V vendors.) . *(See Appendix E for a list of Y2K IV&V vendors with contact information.)*

Exhibit 1

Approved Y2K IV&V Vendors
Affiliated Computer Services (ACS)
Computer Business Solutions, Inc. (CBSI)
HMS Company
IMI Systems
Keane
OAO
RAH Software Technologies
Sapiens

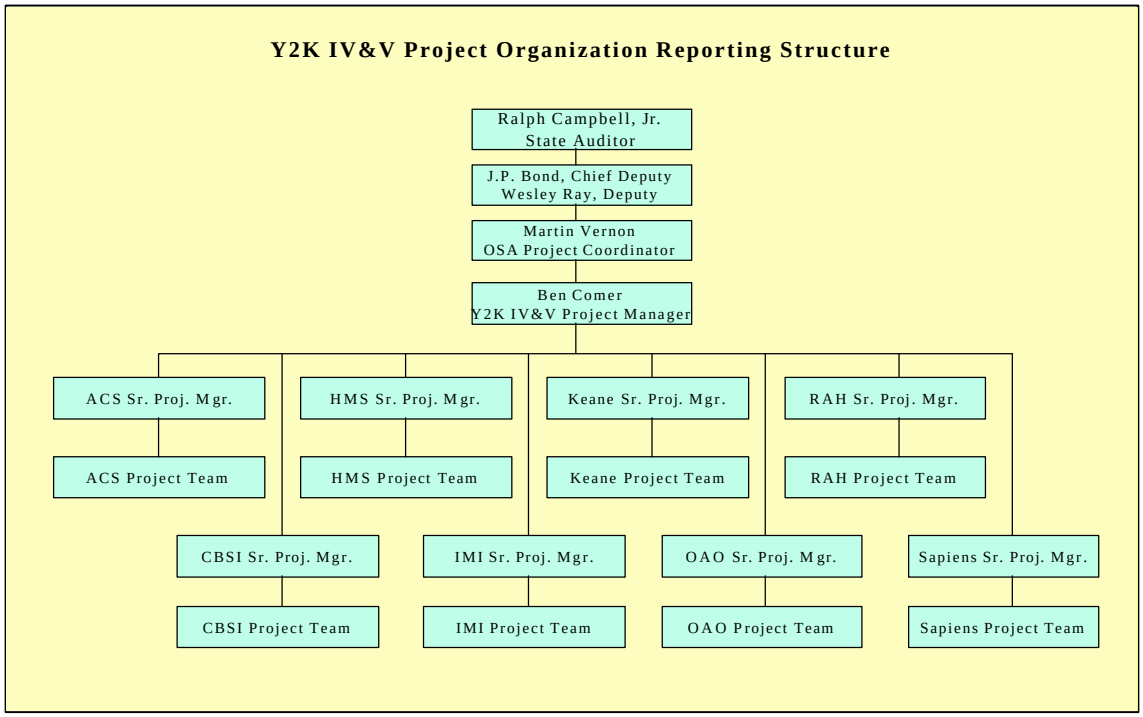
OSA procured the services of a project manager from an independent vendor on the State's SIPS Convenience Contract to assist in evaluation of the vendors responding to the RFP and to manage the day to day activities of the project once activities began. These services were provided by TPMC through their subcontractor, NewSouth Technologies, Inc.

ORGANIZATIONAL REPORTING STRUCTURE

OSA assigned Mr. Martin Vernon, IS Audit Manager, to act as the OSA project coordinator and to oversee all project team activities. The Y2K IV&V Project Manager, Mr. Ben Comer, reported directly to Mr. Vernon. Each of the Y2K IV&V vendors assigned a Senior Project Manager that reported to Mr. Comer and coordinated all of the assigned work for that particular vendor. The Senior Project Managers typically had Project Managers or Project Leaders that were in charge of each of the individual IV&V projects for a particular mission

critical computer application. *(See Figure 1 for an organizational chart of the reporting structure on the project.)*

Figure 1



ASSIGNMENT OF Y2K IV&V PROJECTS

In order to minimize the level of disruption to personnel at the state departments, when possible OSA assigned each department to one and only one Y2K IV&V vendor. Once a department had been assign to a vendor, the vendor conducted all Y2K IV&V activities for all mission critical applications within the department. We made two exceptions to this mode of operation when two of the assigned vendors were unable to provide the Y2K IV&V services for particular applications in a cost competitive manner.

The assignment of departments to vendors was affected by the number and complexity of mission critical computer applications that existed in each department. The departments with larger and more complex applications were assigned to the vendors that most clearly demonstrated an ability to successfully complete the work in a cost-effective manner. OSA determined vendor qualifications based on the following criteria:

- Corporate Qualifications for doing Y2K IV&V (demonstrated ability)
- Past track record (successful completion of projects with high value added)
- Experience of corporation and staff

- Staff availability
- Independence (Corporation had no conflicting interests at a particular department)

For each application under review at each department, the selected vendor prepared a Statement of Work (SOW) outlining the Y2K IV&V work to be completed and providing a not-to-exceed cost estimate and the project plan for completing the work within a specified time frame. In each case, OSA evaluated the SOW for reasonableness of approach and cost effectiveness and either approved the SOW, negotiated changes to the SOW, or reassigned the task to another vendor due to an inability of the assigned vendor to deliver the requested services in a cost competitive manner.

RESULTS

SUMMARY OF STATEWIDE RESULTS OF THE Y2K IV&V PROJECT

Below is a summary of the statewide results of the Y2K IV&V assessments. As described in the Approach section, each application that went through a Verification and Validation Assessment received one of the following opinions: Y2K Ready, Y2K Ready with Minor Modifications, or Not Y2K Ready. Alternatively, applications that went through a due diligence assessment received one of the following opinions: Due Diligence Fully Demonstrated, Due Diligence Moderately Demonstrated, or Due Diligence Not Demonstrated. The table below lists each of these Y2K readiness opinions and the number of applications that received that Y2K readiness opinion.

Type of Y2K Readiness Assessment						Total Applications Reviewed for State
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
74	19	9	8	2	0	112

(Please find a consolidated list of the summary of assessment results by department at Appendix F).

RESULTS BY DEPARTMENT

The information presented below provides a summary by each state department and the high level results of the Y2K readiness assessment for each application within the department.

Administrative Office of the Courts

Summary of Results for the Administrative Office of the Courts

Below is a table that summarizes the results of the Y2K IV&V assessments for the Administrative Office of the Courts.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
2	1	0	0	0	0	3

Results by Application for the Administrative Office of the Courts

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the Administrative Office of the Courts (AOC).

Cash Receipting System

The Cash Receipting System provides the superior and district courts in North Carolina with accurate and timely civil case information. The system is designed to allow for indexing and tracking of civil cases and judgements in the State of North Carolina.

Our procedures included an initial assessment of the Cash Receipting System, review of the processes that AOC used to remediate and test the system, analysis to identify the system's critical business functions, automated code analysis, and analysis of each Y2K error detected by the automated code analyzer. We did not perform validation testing of the system or a detailed inspection of the AOC's test plans and results. Based on the results of these procedures, the AOC Cash Receipting System appears Y2K Ready.

Below is a summary of the types of errors found in analyzing the automated code analysis and visual inspection results for the AOC Cash Receipting System:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No action plan was required, and the application appears Y2K Ready.

Criminal Infractions System

The Criminal Infractions System (CIS) provides the superior and district courts in North Carolina with accurate and timely criminal case information. This is accomplished by automating the process by which these courts create indexes, calendars and docket cases, notify individuals of case status and exceptions, and control the reporting of dispositions and final judgements for criminal cases.

Our procedures included an initial assessment of the Criminal Infractions System, review of the processes that AOC used to remediate and test the system, analysis to identify the system's critical business functions, automated code analysis, and analysis of each Y2K error detected by the automated code analyzer. We did not perform validation testing of the system or a detailed inspection of the AOC's test plans and results. Based on the results of these procedures, the AOC Criminal Infractions System appears Y2K Ready with Minor Modifications.

Below is a summary of the types of errors found in analyzing the results of the automated code analysis of the AOC Criminal Infractions System:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	3	116

The automated code analysis of the Criminal Infractions System's 351,013 lines of software detected a total of 119 Y2K errors: 3 Medium severity errors and 116 Low severity errors.

MEDIUM IMPACT ERRORS

The Medium severity errors were due to a YY field being moved to a CCYY that may cause the list produced for LID (an individual's local identifier) and judgement searches to end prematurely when the list is more than one page long.

LOW IMPACT ERRORS

We noted 116 low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on reports). The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

AOC has submitted a corrective action plan to address the three Medium severity errors and states that the application now appears Y2K Ready.

Civil Case Processing System

The Civil Case Processing System provides the superior and district courts in North Carolina with accurate and timely civil case information. The system is designed to allow for indexing and tracking of civil cases and judgements in the State of North Carolina.

Our procedures included an initial assessment of the Civil Case Processing System, review of the processes that AOC used to remediate and test the system, analysis to identify the system's critical business functions, automated code analysis, and analysis of each Y2K error detected by the automated code analyzer. We did not perform validation testing of the system or a detailed

inspection of the AOC's test plans and results. Based on the results of these procedures, the AOC Civil Case Processing System appears Y2K Ready.

Below is a summary of the types of errors found in analyzing the results of the automated code analysis of the AOC Civil Case Processing System:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	18

The automated code analysis of the Civil Case Processing System's 1,299,579 lines of software detected a total of 18 Y2K errors.

LOW IMPACT ERRORS

We noted eighteen low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on reports). The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

Because the errors found were only Low impact errors, no action plan was required, and the application appears Y2K Ready.

Department of Administration

Summary of Results for the Department of Administration

Below is a table that summarizes the results of the Y2K IV&V assessments for the Department of Administration.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
1	1	0	0	0	0	2

Results by Application for the Department of Administration

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the Department of Administration.

Courier Management System

The Courier Management System is used by Courier Management Services to provide mail services for over 3700 state government or state government-related locations. The system

tracks pick-up and distribution of all state interoffice and courier drop mail. Many office functions exist to maintain this operation including: Maintenance of courier box numbers, courier charges, employee time and expenses, and various reporting procedures. Courier Management System is made up of three sub-systems, namely Weight Management System, State Courier Service System, and Account Receivable System.

Our procedures included an initial assessment, functional analysis, and code analysis of the Courier Management System. Based on the results of these procedures, the Courier Management System appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	3

LOW IMPACT ERRORS

We noted three low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on reports). The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

No action plan was required, and the application appears Y2K Ready.

Motor Fleet Management System

The Motor Fleet Management System (MFM) is used by the Motor Fleet Management Division to procure, maintain, and lease vehicles for many of the State Agencies. The system helps the division maintain this information for approximately 8,000 active vehicles and history for about 15,000 vehicles and 30,000 drivers.

Our procedures included an initial assessment, functional analysis and code analysis of the Motor Fleet Management System. Based on the results of these procedures, the MFM System appears to be Y2K Ready with minor modifications.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	20	32

These errors had the following impacts on the functionality of the Motor Fleet Management system:

MEDIUM IMPACT ERRORS

We identified ten errors which could cause files to be updated with invalid dates, nine errors that could cause reports or screens to be incorrect, and one error that could cause a program to abend in the year 2000.

LOW IMPACT ERRORS

We noted thirty-two low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on reports). The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

The Department of Administration has submitted a corrective action plan to address the twenty medium and thirty-two low errors and states that the application now appears Y2K Ready.

Department of Agriculture

Summary of Results for the Department of Agriculture

Below is a table that summarizes the results of the Y2K IV&V assessments for the Department of Agriculture.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
1	0	0	0	0	0	1

Results by Application for the Department of Agriculture

Below is a summary of the Y2K readiness assessment results for the mission critical computer application at the Department of Agriculture.

Food Distribution System

The Food Distribution Division of the North Carolina Department of Agriculture is responsible for the acquiring, storing, and distribution of food from the United States Department of Agriculture (USDA) to Recipient Agencies (RAs). RAs include the following: public schools, private schools, charitable institutions, disaster organizations, non-profit summer camps for children, and nutrition programs for the elderly. This Food Distribution System provides the staff the capability of recording and tracking all commodities by program from the USDA allocation request to final delivery to the RAs. All of the programs were developed and are maintained by the North Carolina Department of Agriculture Systems Development team.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the North Carolina Department of Agriculture Food Distribution System. Based on the results of these procedures, the Food Distribution System appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No action plan was required, and the application appears Y2K Ready.

Department of Commerce

Summary of Results for the Department of Commerce

Below is a table that summarizes the results of the Y2K IV&V assessments for the Department of Commerce.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
0	0	3	0	0	0	3

Results by Application for the Department of Commerce

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the Department of Commerce.

Industrial Commission Applications

The North Carolina Industrial Commission (the Commission) oversees the administration of the Workers Compensation Act for job related injuries. The Industrial Commission applications include Medical Bill Approval; Accident & Coverage, Letters, & A/R; and State Agency Medical Bill Processing. Because these three applications share resources and are closely integrated, we have chosen to evaluate them together as one integrated application. They will be referred to hereafter as the Industrial Commission applications.

The primary function of the Industrial Commission applications is to monitor and track the reporting and payment of workers compensation claims. This includes tracking disputed claims as they move through the North Carolina appellate court system, and approving medical bills submitted to the Commission as a result of an accident. The tracking is done through the assignment of an Industrial Commission File Number which is assigned to each claim that is reported. As part of the above duties, the Commission sends form letters to various involved

parties, and it maintains databases to track information related to those parties. Additionally, this application maintains an accounts receivable system which primarily records the payment of fees and money paid for various forms offered by the Industrial Commission.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the Industrial Commission applications. Based on the results of these procedures, the Industrial Commission applications appear Not Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	2	25	48

Following is a high level description of the errors found and the impact on the functionality of the Industrial Commission application:

HIGH IMPACT ERRORS

DATE VALUE COMPARISON OR CALCULATION

There is one instance of a comparison being performed between two two-digit years. This will result in an incorrect comparison if a 20th century date is compared with a 21st century date. This error affects a program in the Medical Bill approval application and could result in the Industrial Commission denying some legitimate medical claims, thus leading the insurance companies to withhold payments from the health care providers making the claim.

There is one instance of the century being truncated during a move statement, leaving a two-digit year. The two-digit year will function incorrectly in the year 2000 and beyond. This error will affect a program that is responsible for adding newly reported accidents. If accidents are not added correctly, a corresponding Industrial Commission (IC) number will not be entered for the case. Normally, after the establishment of the IC number, the IC number is sent to the involved parties, including the insurance company handling the claim, the claimant, and the claimant's attorney if applicable. The insurance companies can not proceed with the handling of the claim until the IC number is received.

MEDIUM IMPACT ERRORS

PIVOT YEAR VALUES

There are two instances of incorrect usage of pivot year values. These errors will affect a program that is responsible for adding, deleting or updating the multiple responsible parties file. This file is used to track those cases where an injured employee may be able to seek retribution from more than one party. If this program functions incorrectly, information on one or both of the responsible parties may not be maintained, causing the Industrial Commission to omit the party from necessary correspondence.

HARD-CODED DATE DEFINITIONS

There are two instances where the value '19' is hard-coded as a value for the century field. These errors will affect the creation and distribution of Dusty Trade letters. Dusty Trade letters are sent to those employers whose business may subject employees to occupational disease as a result of contact with hazardous materials. For the protection of the employers and employees, the receipt of the Dusty Trade letter requires certain specific action, such as requiring all new employees to undergo chest x-rays at the time of hire.

DATE VALUE COMPARISON OR CALCULATION

There are eighteen instances of a comparison being performed between two-digit years. This will result in an incorrect comparison if a 20th century date is compared with a 21st century date. These errors will be reflected in printed letters that are sent to outside parties.

There is one instance of a two-digit year being compared with a four-digit year. This will result in an incorrect comparison if the two-digit year being compared is actually larger than the four-digit year. This error will affect the accuracy of Verification letters that are sent out to businesses verifying that their workers compensation coverage has been activated.

There is one instance where the number of days between two dates is calculated using two-digit year fields. This will result in an error if the calculation involves a 20th century date and a 21st century date. This error will affect a pending bill report that is used to determine which bills have yet to be approved.

NON-COMPLIANT LEAP YEAR CALCULATIONS

There is one instance where the leap year is calculated correctly only for the years 84-96. This will result in an error in all leap years that do not fall into that range, including the year 2000. This error affects an online program that displays, updates or deletes accidents from the system.

LOW IMPACT ERRORS

We noted forty-eight low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on reports). The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

The Department of Commerce Industrial Commission has submitted a corrective action plan to address all the High, Medium, and Low impact errors and reports that the applications now appear Y2K Ready.

Department of Correction

Summary of Results for the Department of Correction

Below is a table that summarizes the results of the Y2K IV&V assessments for the Department of Correction.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
0	1	0	0	0	0	1

Results by Application for the Department of Correction

Below is a summary of the Y2K readiness assessment results for the mission critical computer application at the Department of Correction.

Offender Population Unified System (OPUS)

The North Carolina Offender Population Unified System (OPUS) is a custom computer application designed for the North Carolina Department of Correction to track all offenders in an expeditious and accurate manner. OPUS provides many different combinations of statistical information regarding offender sentencing and management. OPUS is a vital link in the efforts of the Criminal Justice System to both protect the citizens of North Carolina from convicted criminals and to provide viable opportunities for the rehabilitation of those offenders who have completed their sentence.

Our procedures included an initial assessment, functional analysis, code analysis, error analysis and limited functional testing of OPUS. Based on the results of these procedures, OPUS appears Y2K Ready with Minor Modifications.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	5	8

These errors had the following impact on the functionality of OPUS.

MEDIUM IMPACT ERRORS

Two programs have logic that has invalid date arithmetic involving subtraction of dates without a century.

- Program IMPGM011: This error could cause disruption of the automated inmate schedule transfer process.

- Program IMTCHECK: This error could cause a failure to verify a threat/protection which could possibly jeopardize inmate safety.

One program has logic that calculates dates without regard to the century.

- Program IPPGM230: This error could prevent management statistics from being available for proper facility management.

Two programs have logic that moves hard coded "19" to the century field.

- Program PPPGM010: This error could prevent a system user from viewing an inmate's risk assessment history.

- Program PPPGM051: This error would prevent the delivery of daily alerts to Department of Correction personnel.

LOW IMPACT ERRORS

We noted eight low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on reports). The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

The Department of Correction has submitted a corrective action plan to address the five medium severity and eight low severity errors and reports that the application now appears Y2K Ready.

Department of Crime Control and Public Safety

Summary of Results for the Department of Crime Control and Public Safety

Below is a table that summarizes the results of the Y2K IV&V assessments for the Department of Crime Control and Public Safety.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
0	1	0	0	0	0	1

Results by Application for the Department of Crime Control and Public Safety

Below is a summary of the Y2K readiness assessment results for the mission critical computer application at the Department of Crime Control and Public Safety.

Information Management System

The Department of Crime Control and Public Safety (DCCPS) Information Management System (IMS) is a shared mainframe operation with a 60-40 split between the Administrative Office of the Courts and the State Highway Patrol. The original system was a Computer Assisted Dispatch (CAD) system which was used to dispatch units, record incidents, record unit activity, enter stolen car report information, record information on traffic fatalities (signal 22) and daily casualties (signal 24), record chemical/radiological incidents and statewide messaging. Other functions have been added to the original CAD system to form an overall Information Management System.

Our Y2K Readiness assessment procedures included an initial assessment, functional analysis, and code inspection of the Information Management System. Based on the results of these procedures, the Information Management System appears Y2K Ready with minor modifications.

Below is a summary of the types of problem date items identified during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	12	3

MEDIUM IMPACT ERRORS

We identified twelve (12) Medium impact errors in the IMS application. The twelve (12) Medium errors found correspond to 12 related IMS Records Management programs that produce citation statistics data. Historically, these twelve programs have been employed to generate selected statistics on citations when the North Carolina Legislature is in session. When, and if, these programs would be run in the year 2000, the program statements with the non-Y2K compliant date logic would fail if statistics were to be produced for a time frame beginning in 1999 and ending in 2000 (i.e. that crosses a year boundary). For these instances, two report requests would be necessary to avoid problems — one for statistics for the query period in 1999 and another for the query period in 2000. The HPCX programs will not fail if statistics are sought for a within-single-year time frame.

LOW IMPACT ERRORS

We noted three low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on reports). The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

DCCPS has submitted a corrective action plan to address the twelve medium severity errors and reports that the application now appears Y2K Ready.

Department of Environmental and Natural Resources

Summary of Results for the Department of Environmental and Natural Resources

Below is a table that summarizes the results of the Y2K IV&V assessments for the Department of Environmental and Natural Resources (DENR).

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
5	1	0	0	0	0	6

Results by Application for the Department of Environmental and Natural Resources

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the Department of Environmental and Natural Resources.

Coastal Area Management Act System

The Coastal Area Management Act (CAMA) system is used by the Division of Coastal Management (DCM) to process and track various permit applications. The system also provides DCM with the ability to obtain the information, statistics, and reporting necessary to support monitoring and enforcement activities, issuance of violation notices, and the assessment and collection of penalties.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the CAMA system. Based on the results of these procedures, the CAMA system appears to be Y2K Ready with minor modifications.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	1	2

MEDIUM IMPACT ERRORS

One error resulted in the creation of contaminated date data within the CAMA system. The response provided by the Information Technology Services (ITS) technical Subject Matter Expert indicates that: "No queries were being made on the data field involved; no negative consequences resulted from the problem. The program code has (since) been corrected."

LOW IMPACT ERRORS

We noted two low impact errors that employ inconsistent windowing break logic but have very minor impact on application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

The Department of Environmental and Natural Resources has submitted a corrective action plan to correct the one medium severity and two low severity errors and reports that the application now appears Y2K Ready.

Federal Trust Fund System

The Federal Trust Fund system is used by the Division of Waste Management (DWM) to process reimbursement payments and track cleanup efforts of petroleum leaks and spills from Underground Storage Tanks (UST). The system also provides DWM with the ability to obtain the information, statistics, and reporting necessary to support monitoring and enforcement activities, issuance of violation notices, contamination cleanup contracts, and penalty assessment.

Our Independent Validation and Verification approach included an initial assessment, manual functional analysis, automated and manual code analysis, and errors compilation of the Federal Trust Fund system. Based on the results of these procedures, the Federal Trust Fund system appears to be Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No action plan was required, and the system appears Y2K Ready.

Radioactive Materials System

The Radioactive Materials System (RMS) within the Division of Radiation Protection (DRP) performs application request processing, issuance of licenses, inspections, and incident reporting for Radioactive Materials. RMS also performs the fee billing and collections for license request, issuance, and renewal.

The RMS system consists of 2 Microsoft Access 97 databases which contain 25 tables, 53 queries, 20 forms, 5 reports, 1 macro, and 1 Visual Basic Access Module. It can run on any Windows 95/98/NT platform. This assessment is only on the specific Microsoft Access data and code modules comprising the Radioactive Materials System (RMS).

Our Independent Validation and Verification approach included an initial assessment, manual functional analysis, automated and manual code analysis, and errors compilation of the RMS. Based on the results of these procedures, the RMS appears to be Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	7

LOW IMPACT ERRORS

We noted seven low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on reports). The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

No action plan was required, and the application appears Y2K Ready.

State Trust Fund System

The State Trust Fund system is used by the Division of Waste Management (DWM) to process reimbursement payments and track cleanup efforts of petroleum leaks and spills from Underground Storage Tanks (UST). The system also provides DWM with the ability to obtain the information, statistics, and reporting necessary to support monitoring and enforcement activities, issuance of violation notices, contamination cleanup contracts, and penalty assessment.

Our Independent Verification and Validation approach included an initial assessment, manual functional analysis, automated and manual code analysis, and errors compilation of the State Trust Fund system. Based on the results of these procedures, the State Trust Fund system appears to be Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	9

LOW IMPACT ERRORS

We noted nine low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on reports). The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

No action plan was required, and the application appears Y2K Ready.

Tanning Application

The Tanning Application is used by the Division of Radiation Protection (DRP) to process and access data pertaining to Tanning Bed Permits and Measurements. The system also provides DRP with the ability to obtain the information, statistics, and reporting necessary to support monitoring and enforcement activities, issuance of violation notices, and penalty assessment.

The Tanning Application consists of a series of individual modules created in Microsoft Access and can run on any Windows 95/98/NT platform. This assessment is only on the specific Microsoft Access data and code modules comprising the Tanning Application.

Our Independent Validation and Verification approach included an initial assessment, manual functional analysis, automated and manual code analysis, and error compilation of the Tanning Application. Based on the results of these procedures, the Tanning Application appears to be Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No action plan was required, and the application appears Y2K Ready.

X-Ray System

The X-Ray System (referred to as the application) is used by the Division of Radiation Protection (DRP) to monitor the scheduling of X-Ray equipment inspections throughout the State. The application tracks when machines are due for inspection and prints invoices to charge the equipment owners the fee associated with the inspection. It also tracks and provides aging information for machines that have not been inspected on schedule.

The application consists of a series of individual modules created in Microsoft Access and can run on any Windows 95/98/NT platform. This assessment is only on the specific Microsoft Access data and code modules comprising the application.

Our Independent Validation and Verification approach included an initial assessment, manual functional analysis, automated and manual code analysis, and error compilation of the application. Based on the results of these procedures, the application appears to be Y2K Ready.

Below is a summary of the types of errors found during the course of the assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No action plan was required, and the application appears Y2K Ready.

Department of Health and Human Services

Summary of Results for the Department of Health and Human Services

Below is a table that summarizes the results of the Y2K IV&V assessments for the Department of Health and Human Services.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
8	3	4	1	2	0	18

Results by Application for the Department of Health and Human Services

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the Department of Health and Human Services.

Automated Collection and Tracking System

The Automated Collection and Tracking System (ACTS) is a Statewide automated Child Support Enforcement System. The system has three primary sub-functions that include: Case Management, Financial Management, and Reporting/Supervisory Functions. The system provides functions to initiate cases, close cases, automatically record events, notify workers through work lists, produce the necessary documents, manage financial transactions, generate billings, schedule court hearings, verify addresses and employment, handle interstate cases, and support Federal reporting requirements. In addition, the system supports interfaces that gather information to assist in absent parent location and paternity establishment.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the ACTS application. Based on the results of these procedures, the ACTS application appears to be Y2K Ready with minor modifications.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	9	24

The following is a high level description of the errors found and the impact on the functionality of the ACTS application:

MEDIUM IMPACT ERRORS

PIVOT YEAR RULE VIOLATIONS

There is one instance where the century is determined by checking to see if the year is greater than 99. This will fail in the 21st century, and the result will lead to an incorrect Effective Date as well as an incorrect Check Date when dealing with Electronic Fund Transfer.

There are two instances (in one program) where within a pivot year there is a "20" assigned to the two digit year field instead of being assigned to the two digit century field. This would result in incorrect dates being used within the participant address table (if date information was entered or changed). It would also affect the Update Date for the participant's cases.

HARD CODED DATES

There is one instance where a "19" is permanently assigned as the century. As a result of this, if an entry were made in the 21st century in a participant tax detail table (used when intercept processing is required) the Entry Date would be incorrect. However, this is an error that would halt testing or on-line processing and would be fixed before the program could be run in production.

There are two instances where a "19" is permanently assigned as the century. Due to the location of these errors they could effect multiple programs within the ACTS application dealing with Payment Trailer and Receipt Dates. However, these errors will only occur in the leap years of the next century. Also, they would produce an error to be corrected the next day by the operator.

DATE COMPARISON

There is one instance where an eight digit date field is being compared to the first six digits of another eight digit date field. The eight digit field would always (and erroneously) be greater. This would result in the program not looking back at prior months, which would then result in a payee not receiving prorated money if it is in fact due to them.

There are two instances where comparisons are done on MMYY fields. These are comparisons to find a range between two dates. In one case the end result would be an incorrect calculation that would then be compared to a Tax Fee Amount which, if the two are not equal, will result in an error in completing the Intercept Adjustments. The other case would result in incomplete reporting of the Federal/State Intercept Distribution.

LOW IMPACT ERRORS

We noted twenty-four low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on reports). The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

DHHS has submitted a corrective action plan to address the nine medium severity and twenty-four low severity errors. They report that all corrective system fixes were implemented in the October 1, 1999 release and that ACTS now appears Y2K Ready.

Child Abuse and Neglect Application

The Child Abuse and Neglect Application (CYA) keeps track of children who may have suffered as a result of abuse and neglect. The application also keeps track of information regarding child fatalities.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the CYA application. Based on the results of these procedures, the CYA application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	4

Following is a high level description of the errors found and the impact on the functionality of the CYA application:

LOW IMPACT ERRORS

We noted four low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports) or have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

Since all errors noted for this application were low impact, no corrective action plan was required, and the application appears Y2K Ready.

Child Placement and Payment Application

The Child Placement and Payment (PQA) application keeps track of the placement of children who are in foster care or who have been adopted as a result of being placed in the legal custody of a County Department of Social Services. The application also processes payments that are made to foster parents and adoptive parents, Child Caring Institutions (CCI) and Vendors.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the PQA application. Based on the results of these procedures, the PQA application appears Not Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	9	0	6

Following is a high level description of the errors found and the impact on the functionality of the PQA application:

HIGH IMPACT ERRORS

There is a date routine program called by the PQA application that contributes to all of the core functions.

INVALID DATE FORMAT

All of the dates in this program do not include a century. This program is maintained as part of the Eligibility Information System (EIS) application but is critical to the functionality of the PQA application. It will fail in the Year 2000 and beyond.

HARD CODED DATE

In the same date routine program there is an invalid date comparison on a hard coded date of '12/31/99' that does not contain the century. This logic will fail in the year 2000 and beyond and will affect the functionality of the application.

There is a second date routine module that contributes to all of the core functions of the PQA application and contains seven total errors that have been classified into the four types of errors listed below. The errors will cause failure in the year 2000 and beyond and will effect the functionality of the application.

DATE CALCULATION

There is one instance of a calculation being performed on a 2-digit year. This will produce incorrect results.

HARD CODED DATES

There is one instance of a hard-coded value that is used to calculate the century of a year. This will fail after 12/31/99.

INVALID DATE FORMAT

There are three instances of date fields that contain 2-digit years.

TRUNCATION ERRORS

There is one instance where, as a result of an incorrect move, the high order digit of a calculated day will be truncated. There is a second instance where, as a result of an incorrect move, the century of a year will be truncated.

LOW IMPACT ERRORS

We noted six low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports) or have a very minor impact on the application

functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

DHHS has submitted a corrective action plan to address the nine high severity and six low severity errors, and they report that the application now appears Y2K Ready.

Consolidated Contracts Data System

The Consolidated Contracts Data System (CCDS) application aids DHHS and the Department of Environmental and Natural Resources (DENR) budget and controller offices in entry and tracking of contracts, budget revisions, expenditures, and payments for specific activities under a contractor.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the CCDS application. Based on the results of these procedures, the CCDS application appears to be Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Food Stamps Information System and Electronic Benefits Transfer Application

The Food Stamps Information System (FSIS) processes applications for food stamp benefits and determines which applicants qualify to receive food stamps. For qualifying customers, the system issues and redeems food stamps. Daily, weekly, monthly and quarterly reports are also produced giving various information concerning the transactions made by the system. The Electronic Benefits Transfer (EBT) application enables the electronic transmission of benefits to recipient accounts.

For assessment and reporting purposes, the Food Stamps Information System and the Electronic Benefits Transfer functions have been grouped and classified as a single application (FSIS).

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the FSIS application. Based on the results of these procedures, the FSIS application appears Not Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	2	5	6

Following is a high level description of the errors found and the impact on the functionality of the FSIS application:

HIGH IMPACT ERRORS

DATE VALUE COMPARISON

There are two instances of subtraction being performed on a two-digit year. This may result in a negative number, thereby producing an error. These errors will affect the status of pending cases.

MEDIUM IMPACT ERRORS

DATE VALUE COMPARISON

There are two instances of subtraction being performed on a two-digit year field. These errors will affect three reports detailing payment activity from the previous month because subtracting 1 from the year 00 will produce unpredictable results.

There are two instances of two 2-digit year fields being compared. These errors will affect activity reports for individual counties by populating the reports with invalid data from the input files.

There is one instance of a 6 digit date field being compared to an 8 digit year field. This error will affect two reports for individual counties by populating the reports with invalid data from the input files.

LOW IMPACT ERRORS

We noted six low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports) or have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

DHHS has submitted a corrective action plan to address the two high severity, five medium severity, and six low severity errors, and they report that the application now appears Y2K Ready.

Healthcare Enterprise Accounts Receivable Tracking System

The Healthcare Enterprise Accounts Receivable Tracking System (HEARTS) is used for reporting and data management related to patient tracking, billing and receivables. HEARTS is a packaged vendor application known as "Affinity" from Compucare. The Personal Funds subsystem is an interface to HEARTS and is planned for use by fifteen of the sixteen DHHS institutions. The Personal Funds System was developed by OAO Corporation.

Our procedures included a compliance audit of the year 2000 readiness of HEARTS, which includes the Personal Funds subsystem. This compliance audit leveraged interviews and documentation with key DHHS, Compucare, and OAO personnel to review the following:

- HEARTS and Personal Funds subsystem components (client and server hardware and software configurations).

- Test plans, test specifications, and test results.

- The contracts, terms, and agreements between DHHS and Compucare and between DHHS and OAO.

- The established contingency plans.

This was a due diligence assessment, and based on the results of the procedures performed, HEARTS receives a "Due Diligence Moderately Demonstrated" opinion related to its Y2K readiness. Below is a summary of the findings that support this opinion.

1. Compucare has documentation available in the form of Y2K validation test plans and results that demonstrates integrated system testing of the remediated code of the Affinity application. Unfortunately, this was done in their own computing environment that has a significantly different hardware/software configuration than the computing environment at DHHS. However, the results of these tests indicate that no critical defects were found that would have hindered normal daily hospital operations. However, the testing did uncover areas of the system where dates could be manipulated or displayed more effectively. Compucare also had an independent Y2K verification performed by Information Technology Association of America (ITAA) resulting in certification being awarded.

2. The most recent Y2K compliant version of HEARTS has not been implemented in all sixteen agencies. Therefore, thorough system and integration testing for Y2K compliance of this new version of HEARTS has not yet been completed. This leaves a short amount of time to find and correct any errors or issues should they arise. End users are also expected to ensure the Y2K compliance of the individual remote PCs that access HEARTS. Although this creates some concern, our opinion is that the Agency will perform the necessary system and integration testing and that Compucare has done a comprehensive job of remediation and testing, which will allow for a successful implementation.

3. OAO contends that the Personal Funds subsystem was originally developed to be year 2000 compliant. The company has issued a compliance letter to the agency dated August 17, 1999 which states that the system was tested in-house by OAO contract personnel under OAO's Y2K testing specifications for Y2K compliance. However, there was no evidence provided to us in the form of Y2K test plans or Y2K test results to support the claim that Y2K testing was done and to show that due diligence has been achieved. It should be noted that most of the components used with the Personal Funds software have product Y2K readiness disclosures and that the system was developed with Y2K compliant versions of Microsoft Visual Basic v6.0, Microsoft Visual C++ v6.0, Crystal Reports v7.0, and Sybase as the relational database.

The department has agreed to work with the application vendor to correct any deficiencies noted during our assessment. They implemented HEARTS in production on October 1, 1999 and have plans to further test the Y2K readiness of the application.

Low Income Energy Assistance Program Application

The Low Income Energy Assistance Program (LIEAP) Application is used by the Division of Social Services to provide energy assistance to qualified low income households who are subject

to rising energy costs. The program offers outreach services and application processing to the general public.

Our procedures included an initial assessment and functional testing of the LIEAP application. Based on the results of these procedures, the LIEAP application appears Not Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	3	0	1

Following is a high level description of the errors found and the impact on the functionality of the LIEAP application:

HIGH IMPACT ERRORS

DATE COMPARISON

There is an invalid date comparison that will cause the General Ledger interface with the DAS General Ledger to fail.

A second invalid date comparison will cause a program failure on valid dates in year 2000 and beyond when attempting to read the Food Stamps Master File. The data from the Food Stamps Master File avoids duplicate data entry and is used as a cross-reference between energy assistance and food stamps eligibility. The data is also necessary to support the outreach program.

INVALID DATE FORMAT

There is an instance where a date field in the Food Stamps Master File has only two positions for 'Year' which does not allow for year 2000 and beyond because it will not be recognized as being greater than the certification date of October 1998. This will cause input file rejection and exclusion of the Foodstamps Master File data.

LOW IMPACT ERRORS

We noted one low impact error that has a very minor impact on the application functionality. The Agency may wish to consider correcting this error to improve the accuracy of the application. However, this error does not impact the overall Y2K readiness opinion of the application.

DHHS has submitted a corrective action plan to address the three high and one low error and report that the application now appears Y2K Ready.

Medicaid Claims Processing Assessment Application

The Medicaid Claims Processing Assessment application (MCC) performs a set of audits and edits on medical, surgical, and institutional details for every Medicaid claim processed to verify that payments are being made correctly.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the MCC application. Based on the results of these procedures, the MCC application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No action plan was required, and the application appears Y2K Ready.

Master Client Index Application

The Master Client Index (MCI) application is a means of storing basic information about individuals who have applied for or received benefits or services in two automated systems: Eligibility Information System (EIS), and the Food Stamps Information System (FSIS). The information is used by the Health Care Financial Administration.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the MCI application. Based on the results of these procedures, the MCI application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No action plan was required, and the application appears Y2K Ready.

Master Facility Query and Reporting Application

The Master Facility Query and Reporting (MFQ) Application is a system that reports on or requests output from the information resident in the Master Facility File databases.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the MFQ application. Based on the results of these procedures, the MFQ application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No action plan was required, and the application appears Y2K Ready.

Medical Cybernetics Plus Pharmacy System

The Medical Cybernetics Plus Pharmacy System (MC/Plus Pharmacy system) is currently operational at ten institutions of the Division of Mental Health, Developmental Disabilities and Substance Abuse Services. The system is used for reporting and data management related to drug utilization. Specific functions include: drug dispensing, refill scheduling, monitoring for side effects, drug disease contraindications, drug dosage monitoring, ad hoc reporting, and a drug-lab interface.

Our procedures included a compliance audit of the year 2000 readiness of the MC/PLUS application. This compliance audit leveraged interviews and documentation with key DHHS personnel and Medical Cybernetics personnel to review the following:

- The MC/PLUS system components (client and server hardware and software configurations).
- The contracts, terms, and agreements between DHHS and Medical Cybernetics.
- The established contingency plans.

This was a due diligence assessment, and based on the results of the procedures performed, the MC/PLUS application receives a "Due Diligence Moderately Demonstrated" opinion related to its Y2K readiness. Below is a summary of the findings that support this opinion.

1. Medical Cybernetics does not have documentation available that demonstrates integrated system testing or user acceptance testing of the remediated code of the MC/PLUS application. DHHS has chosen not to do user acceptance testing on the Y2K compliant version since the software is running in four locations without issue and since DHHS is upgrading all hardware and operating systems to Y2K compliant versions. Choosing to forgo user acceptance testing is not uncommon for users using commercial-off-the-shelf software. However, it should be noted that Medical Cybernetics is a small company, and the State of NC is the company's only client, so Y2K testing may not have been as thorough as one may expect from larger companies with a larger customer base and more testing resources.

2. Some of the institution pharmacy departments have not yet upgraded to MC/PLUS version D4.0. These remaining institutions should migrate to the most recent Y2K compliant version of MC/PLUS to ensure adequate time for testing. End users are also expected to ensure the Y2K compliance of the individual remote PCs that access the MC/PLUS system.

3. Medical Cybernetics has successfully component tested the MC/PLUS system and has issued a Y2K readiness disclosure statement for each component. However, the company has not completed integrated system testing and does not plan to do so.

4. The year 2000 is not specifically addressed in the current contract between DHHS and Medical Cybernetics. However, the company has committed to providing solutions in the event of software failure due to year 2000 problems. This is based upon the new licensing agreement that provides technical support and maintenance of their software.

5. The documentation of the Y2K contingency plan for the operations surrounding the MC/PLUS application is under development and is not complete at the time of this

writing. However, in the event the system becomes inoperable because of the year 2000, there is a proven manual process to rely on to maintain continued operations. DHHS still maintains the paper forms used in the manual process in case of system failure.

DHHS has agreed to work with Medical Cybernetics to address the shortcomings found during our assessment.

Master Facility System

The Master Facility (MFR) is a system used to accumulate and maintain information on all regulated medical facilities in North Carolina.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the MFR application. Based on the results of these procedures, the MFR application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No action plan was required, and the application appears Y2K Ready.

Medicaid Accounting System

The Medicaid Accounting System (WDA) application provides a means to download North Carolina Accounting System (NCAS) transactions to the DHHS Medicaid Accounting System used by the Division of Medical Assistance (DMA). This information is used to produce adjustment transactions from multiple sources and produce error, detail and balancing reports. A quarterly process produces a summary report of adjustment transactions for use in mandatory Health Care Financial Administration (HCFA) reporting. This information is used by the HCFA.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the WDA application. Based on the results of these procedures, the WDA application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No action plan was required, and the application appears Y2K Ready.

Medicaid Management Information System

The Medicaid Management Information System (MMIS) performs many functions, but primarily is designed to process the Medicaid claims that are submitted by the providers of

services to Medicaid recipients. Additionally, the system tracks prior approval information for services requiring prior approval. In order for a claim to be paid, the system must be able to verify the following:

- individual was eligible for medical assistance on the date the service was rendered.
- provider of the service meets requirements as a Medicaid provider.
- service received prior approval if required.

The MMIS is operated and maintained by Electronic Data Systems Corporation (EDS), contracted as fiscal agent for the DMA since 1977. Since EDS has been maintaining MMIS since its development, DHHS initiated an amendment (number 37) to the original contract that became effective October 1, 1997 to have EDS implement Year 2000 modifications to the North Carolina MMIS application.

Our procedures included a high level review of the year 2000 readiness of the MMIS application. We received contracts from DHHS and testing documentation from EDS. We evaluated this documentation to identify the existence and reasonableness of the following:

- Objective of Project.
- Scope of Project.
- Detailed Remediation Approach.
- Listing of Remediation Procedures & Resources Used.
- Detailed Testing Approach.
- Listing of Testing Procedures & Resources Used.
- Test Results Key.
- Results of Testing (expected results versus actual results of various test case scenarios).
- Interpretation of Test Results.
- Implementation of application into the production environment.
- Conclusion: Opinion based on the test results.

In addition, we leveraged interviews and documentation with key DHHS and DMA personnel to review the following:

- The contracts, terms, and agreements between DHHS and EDS.
- A memo titled “Medicaid Y2K IV&V Follow-up Visit Report for NC MMIS”
- The established contingency plans.

This was a due diligence assessment, and based on the results of the procedures performed, the MMIS application receives a “Due Diligence Fully Demonstrated” opinion related to its Y2K readiness. Below is a summary of the findings that support this opinion.

1. The documentation received from DHHS and DMA met all of the OSA identified criteria above. Notably, DMA provided us with a 552-page document of test case

scenarios that were performed by EDS. For each scenario, there was an expected result and actual result, and documented actions taken to make corrections when necessary.

2. The Health Care Financing Administration (HCFA) visited DMA twice to conduct its own IV&V. HCFA, a federal agency within the U.S. Department of Health and Human Services, administers the Medicare, Medicaid, and Child Health Insurance Programs. MMIS was in the validation phase during HCFA's visits on December 9-10, 1998 and June 8-11, 1999. On both visits, HCFA judged MMIS to have low risk of failing to fulfill Medicaid requirements in the year 2000.

3. DHHS initiated an amendment (number 37) to the original contract that became effective October 1, 1997 to have EDS implement Year 2000 modifications to the North Carolina MMIS application. A memo dated June 8, 1999 from Jim Clayton, EDS Executive Director, to DMA stated that EDS has completed Y2K compliance upgrades to the NC MMIS as defined by Contract Amendment 37, "Modifications to the NC MMIS to become Year 2000 Compliant."

4. The documentation of the Y2K contingency plan was complete and appears to address the events that would impact the mission critical functions of the MMIS.

Since the application received a "Due Diligence Fully Demonstrated" opinion, no additional action was required on behalf of DHHS to raise our level of confidence regarding the applications Y2K Readiness.

Social Security Reimbursement Application

The Social Security Reimbursement (VIA) application performs the function of obtaining reimbursements for the cost incurred in order to rehabilitate an individual so that they can resume a position within the workforce.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the VIA application. Based on the results of these procedures, the VIA application appears Y2K Ready with minor modifications.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	2	9

Following is a high level description of the errors found and the impact on the functionality of the VIA application:

MEDIUM IMPACT ERRORS

HARD CODED DATES

There are two instances where the dates used to establish a range have a hard coded century. The Agency is eligible to receive reimbursements for any expenses incurred to rehabilitate an individual in an attempt to return them to the workforce. This date range is used to establish the length of time an individual has sustained a gainful amount of income in order for the Agency to be reimbursed.

LOW IMPACT ERRORS

We noted nine low impact errors that have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

DHHS has submitted a corrective action plan to address the two medium and nine low errors, and they report that the application now appears Y2K Ready.

Supplemental Social Security Data Exchange Application

The Supplemental Social Security Data Exchange (VSD) application receives Supplemental Security Income (SSI) data and passes this data to other systems within the state so it can be used to satisfy important eligibility requirements, resolve errors and correct missing data issues. The system also implements annual cost of living increases for Social Security Administration (SSA) recipients.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the VSD application. Based on the results of these procedures, the VSD application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No action plan was required, and the application appears Y2K Ready.

Third Party Query Application

The Third Party Query (HWA) application is used by county caseworkers as an alternative method of verifying Title II Retirement, Survivors, Disability, and Insurance (RSDI) and Title XVI Supplemental Security Income (SSI) benefits. It may be used when the State On Line Query (SOLQ) system is unavailable or when 40 quarters of information for aliens is needed.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the HWA application. Based on the results of these procedures, the HWA application appears to be Y2K Ready with minor modifications.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	1	4

Following is a high level description of the errors found and the impact on the functionality of the HWA application:

MEDIUM IMPACT ERRORS

DATE VALUE CALCULATION

There is one instance of a calculation that is performed on a date that does not contain the century. As a result of this calculation the program will fail and validation reports will not be produced. County workers use these reports to identify an incorrect SSN. The reports also serve as a reminder of outstanding corrective actions that need to be taken. The Subject Matter Expert determined that Medicaid payments and coverage in other programs would continue if corrective actions were not taken.

LOW IMPACT ERRORS

We noted four low impact errors that have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, the errors do not impact the overall Y2K readiness opinion of the application.

DHHS has submitted an action plan to address the one medium severity and the four low severity errors, and they state that the application now appears Y2K Ready.

Department of Insurance

Summary of Results for the Department of Insurance

Below is a table that summarizes the results of the Y2K IV&V assessments for the Department of Insurance.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
0	1	0	0	0	0	1

Results by Application for the Department of Insurance

Below is a summary of the Y2K readiness assessment results for the mission critical computer application at the Department of Insurance.

Agent Licensing and Continuing Education System

The Agent Licensing and Continuing Education System is used by Agent Services Division, which is part of Regulatory/ Public Services group of the State of North Carolina, Department of Insurance. This division is designed to protect the general public of North Carolina by making sure the individuals representing the industry have an adequate knowledge of the industry and possess the moral and ethical characteristic necessary to operate in a fiduciary capacity. The division's main function is to regulate all licensed agents, brokers, limited representatives, appraisers and adjusters authorized to do business in North Carolina. This includes all activities concerning licensing, appointing and educating agents, brokers, adjusters and limited representatives, both resident and non-resident selling insurance and adjusting claims of insurance in the state.

Our procedures included an initial assessment, functional analysis, code analysis, and functional testing of the Agent Licensing and Continuing Education System. Based on the results of these procedures, the Agent Licensing and Continuing Education System appears Y2K Ready with Minor Modifications.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	2	29

These errors had the following impacts on the functionality of Agent Licensing and Continuing Education System.

MEDIUM IMPACT ERRORS

The input tape from 'Assessment Systems Incorporated', supplied by an external agency will not be loaded to the database in January 2000.

The license issue date will be wrongly printed during certain instances due to comparison of incorrect format of appointment and effective dates.

LOW IMPACT ERRORS

We noted twenty-nine low impact errors that have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, the errors do not impact the overall Y2K readiness opinion of the application.

The Department of Insurance has submitted a corrective action plan that addresses the medium severity and low severity errors and reports that the application now appears Y2K Ready.

Department of Justice

Summary of Results for the Department of Justice

Below is a table that summarizes the results of the Y2K IV&V assessments for the Department of Justice.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
14	0	0	0	0	0	14

Results by Application for the Department of Justice

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the Department of Justice.

OSA initially planned to do the Independent Verification and Validation (IV&V) of the mission critical applications at the Department of Justice. However, prior to the initiation of our effort, the Department of Justice contracted with an independent vendor to do the IV&V of its applications. The vendor was an approved Y2K IV&V vendor, so OSA chose to forgo our IV&V of these applications since it was apparent that our project would duplicate efforts already underway.

We worked with the Department of Justice and identified fourteen mission critical applications. *(See the list of Department of Justice mission critical applications at Appendix C.)* The assessment completed for these applications differs from our IV&V assessments in that the vendor identified Y2K errors, communicated them to the Department Justice, and tested the corrections made by the Department of Justice to ensure they adequately addressed the errors. This approach enabled the vendor to offer a Y2K Ready opinion on all 14 of the mission critical applications at the Department of Justice.

Department of Labor

Summary of Results for the Department of Labor

Below is a table that summarizes the results of the Y2K IV&V assessments for the Department of Labor.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
3	0	0	0	0	0	3

Results by Application for the Department of Labor

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the Department of Labor.

Boiler Inspections System

The Boiler Inspections System is used by the Boiler Safety Bureau of the Standards & Inspections Division. The system stores descriptive information about boiler and pressure vessels located within North Carolina, updates inspection activity, tracks safety violations and repairs, and produces inspections invoices and certificates of operation.

Our procedures included an initial assessment, functional analysis, code analysis, error analysis, and functional testing of the Boiler Inspections System. Based on the results of these procedures, the Boiler Inspections System appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Elevator Inspections System

The Elevator Inspections System is used by the Elevator & Amusement Device Bureau of the Standards & Inspections Division to track safety and health site inspections conducted by the state Department of Labor. The system stores descriptive information about elevators located within North Carolina, updates inspection activity, tracks safety violations and repairs, and produces certificates of operation.

Our procedures included an initial assessment, functional analysis, code analysis, errors analysis, and functional testing of the Elevator Inspections System. Based on the results of these procedures, the Elevator Inspections System appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Occupational Safety and Health Inspections System

The Occupational Safety and Health Inspections System (OSHA Inspections System) is used the by Statistics Information and Management of the OSHA Division to track safety and health site inspections conducted by the state Department of Labor. The system receives data from the federal Department of Labor and the state Employment Security Commission.

Our procedures included an initial assessment, functional analysis, code analysis, error analysis, and functional testing of the OSHA Inspections System. Based on the results of these procedures, the OSHA Inspections System appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No action plan was required, and the application appears Y2K Ready.

Department of Public Instruction

Summary of Results for the Department of Public Instruction

Below is a table that summarizes the results of the Y2K IV&V assessments for the Department of Public Instruction.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
3	1	1	0	0	0	5

Results by Application for the Department of Public Instruction

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the Department of Public Instruction.

ABC Tools Application

The ABC Tools Application uses data from the State Testing program to produce ABC Growth Reports, which measure student performance from year to year. ABC Tools provides EOG and EOC Summaries, Performance Level Analysis, and School Rosters from SIMS data files.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the ABC Tools Application. Based on the results of these procedures, the ABC Tools Application is Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Budget Utilization and Development Application

The Budget Utilization and Development (BUD) Application is a system that the Local Education Agencies (LEA) use at their unit to create, change and send their Federal Initial Budgets and Amendments to the Department of Public Instruction.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the BUD Application. Based on the results of these procedures, the BUD Application appears Y2K Ready with minor modifications.

The BUD Application had fourteen Y2K Date Failures in eight Program Modules, one CLP Module, and two DDS Modules.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	2	12

These errors have the following impacts on the BUD Application:

MEDIUM IMPACT ERRORS

The LEA will not be able to create the Federal Budget Transfer Records to send to DPI for their budget reporting.

LOW IMPACT ERRORS

We noted twelve low impact errors that have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, the errors do not impact the overall Y2K readiness opinion of the application.

DPI has submitted a corrective action plan that states that they will implement the required system modifications to address the medium and low severity errors in the next release date for the application (November-December 1999). Once this release is implemented, the application will appear Y2K Ready.

Budgetary Allotment Application

The Budgetary Allotment Application is a system for planning, tracking, and reporting the annual operating budget of all state Local Education Agency (LEAs).

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the Budgetary Allotment Application. Based on the results of these procedures, the Budgetary Allotment Application is Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Child Nutrition Application

The Child Nutrition Application is used by the Child Nutrition Claims Section within the Division of School Business Services of the Department of Public Instruction for the purpose of generating reimbursement of claims to sponsors participating in this federally funded food program and to meet federally mandated reporting requirements.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the Child Nutrition Application. Based on the results of these procedures, the Child Nutrition Application appears Not Y2K Ready.

The Child Nutrition Application had 72 Y2K Date Failures in 15 Program Modules.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	49	5	18

These errors had the following impacts on the Child Nutrition Application:

HIGH IMPACT ERRORS

We noted forty-nine high impact errors that will affect end users ability to accurately do the following:

- Edit data for determining cost allocation and claims reimbursement.
- Create and update data for making adjustments to cost allocation and claims.
- Obtain information regarding Child Nutrition operation and participation.
- Provide general reporting by LEA with school data.

MEDIUM IMPACT ERRORS

We noted five medium impact errors that will affect secondary functionality related to providing information for Child Nutrition operation and participation.

LOW IMPACT ERRORS

We noted eighteen low impact errors that have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, the errors do not impact the overall Y2K readiness opinion of the application.

DPI has submitted a corrective action plan to address the high severity, medium severity, and low severity errors and reports that the application now appears Y2K Ready.

Salary Administration System

The Salary Administration Application is used by the Salary Administration Section within the Department of Public Instruction to certify and audit Educator's salary.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the Salary Administration Application. Based on the results of these procedures, the Salary Administration Application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No action plan was required, and the application appears Y2K Ready.

Department of Revenue

Summary of Results for the Department of Revenue

Below is a table that summarizes the results of the Y2K IV&V assessments for the Department of Revenue.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
3	0	0	0	0	0	3

Results by Application for the Department of Revenue

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the Department of Revenue.

OSA initially planned to do the Independent Verification and Validation (IV&V) of the mission critical applications at the Department of Revenue. However, prior to the initiation of our effort, the Department of Revenue contracted with an independent vendor to do the IV&V of its applications. The vendor was an approved Y2K IV&V vendor, so OSA chose to exclude our IV&V of these applications since it was apparent that our project would duplicate efforts already underway.

We worked with the Department of Revenue and identified four mission critical applications. *(See list of Department of Revenue mission critical applications at Appendix C.)* The assessment completed for these applications differs from our IV&V assessments in that the vendor identified Y2K errors, communicated them to the Department Revenue, and tested the corrections made by the Department of Revenue to ensure they adequately addressed the errors. This approach enabled the vendor to offer a Y2K Ready opinion on all 3 of the mission critical applications reviewed thus far at the Department of Revenue. The Y2K IV&V assessment for the Integrated Tax Administration System (ITAS) was not complete in time to include the results in this report. The results of this IV&V will be reported in our supplemental Y2K IV&V report in December 1999.

Department of the Secretary of State

Summary of Results for the Department of the Secretary of State

Below is a table that summarizes the results of the Y2K IV&V assessments for the Department of the Secretary of State.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
2	1	0	0	0	0	3

Results by Application for the Department of the Secretary of State

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the Department of the Secretary of State.

Corporate Information Management System

The Corporate Information Management System (CIMS) is used to house and maintain the information and forms of Corporations and Limited Partnerships that are qualified to do business in the State of North Carolina. CIMS users in the Corporations Division access the system daily to process incoming filing documents, track documents through the system, and produce certification, rejection and refund letters. All transactions entered into CIMS at the Corporation Division of the Department of the Secretary of State are maintained until the corporation or limited partnership is dissolved or canceled.

Our Y2K Readiness assessment procedures included an initial assessment, functional analysis, and code inspection of CIMS. Based on the results of these procedures, CIMS appears Y2K Ready.

Below is a summary of the types of problem date items found during the course of our assessment and the level of their operational severity:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	4

LOW IMPACT ERRORS

We noted four low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports) or have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

Since the errors found were only low severity errors, no action plan was required, and the application appears Y2K Ready.

Securities Information System

The Securities Information System is used by employees of the Securities Division to track information related to Investment Advisers, Investment Representatives, and Offerings registered for sale in North Carolina.

Our Y2K Readiness assessment procedures included an initial assessment, functional analysis, and code inspection of the Securities Information System. Based on the results of these procedures, the Securities Information System appears Y2K Ready.

Below is a summary of the types of problem date items found during the course of our assessment and the level of their operational severity:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Uniform Commercial Code Information System and Federal Tax Lien System

The Uniform Commercial Code Information System (UCC) provides a method of giving notice of security interest in personal property to interested third parties. The method utilizes a 'notice' filing system referred to as the Federal Tax Lien System. Information, such as security agreements, financing statements, and lien history, is maintained on these systems and is provided to the public.

Our Y2K Readiness assessment procedures included an initial assessment, functional analysis, and code inspection of the UCC and Tax Lien systems. Based on the results of these procedures, the UCC and Federal Tax Lien systems appear Y2K Ready with Minor Modifications.

Below is a summary of the types of problem date items found during the course of our assessment and the level of their operational severity:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	13	0

MEDIUM IMPACT ERRORS

We noted thirteen medium impact errors that affect application functionality as described below.

A 'Medium' Operational Severity item was found in program ID032 and occurs in nine statements within the program. This statement compares 2-digit year formats that do not

contain the century. Because the century is not included in the comparison, the condition will produce erroneous information in the Year 2000. This program produces the Data Entry Proof Listing Report. If this error is not corrected, the report could contain incorrect and duplicate information.

A 'Medium' Operational Severity item was found in program ID032 and occurs in two statements. In this item, a 2-digit year comparison occurs. In the Year 2000 when YY will contain '00' for the year 2000, the result of the comparison will be false. This program produces the Data Entry Proof Listing Report. If this error is not corrected, the report could contain incorrect and duplicate information.

A 'Medium' Operational Severity item was found during the manual inspection of Easytrieve program ID031EZ. Two statements were found to contain a two-position year that will carry the value '00' in the year 2000. In this item, a 2-digit year comparison occurs. In the Year 2000 when YY will contain '00' for the year 2000, the result of the comparison will be false. Program ID031EZ produces the Lien Fee Statement Report. This report is sent to the IRS and is used to determine reimbursement of Lien Fee funds back to the State. The error detected would erroneously include or exclude records from this report.

The Secretary of State has submitted a corrective action plan to address the thirteen medium severity errors and reports that the application now appears Y2K Ready.

Department of the State Treasurer

Summary of Results for the Department of the State Treasurer

Below is a table that summarizes the results of the Y2K IV&V assessments for the Department of the State Treasurer.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
5	1	0	0	0	0	6

Results by Application for the Department of the State Treasurer

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the Department of the State Treasurer.

Active Members Contribution System

The Active Members Contribution System is used by the Retirement Division of the Treasurer to maintain salary and retirement contributions paid to state employee accounts.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the Active Members Contribution System. Based on the results of these procedures, the Active Members Contribution System appears Y2K Ready with minor modifications.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	2	11

Following is a high level description of the errors found as well as the impacts on the functionality of the Active Members Contribution System:

MEDIUM LEVEL ERRORS

DATE VALUE COMPARISON AND CALCULATION

There were 2 instances identified in which two-digit years were used in comparisons. The logic will be incorrect when the year changes to 2000. Each case can be corrected by maintenance changes to the two affected programs.

Failure of either instance would result in incorrect processing of applicants to the Retirement/Refund Transition systems.

LOW LEVEL ERRORS

We noted eleven low impact errors that have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, the errors do not impact the overall Y2K readiness opinion of the application.

The Department of the State Treasurer has submitted a corrective action plan that addresses the medium severity and low severity errors and reports that the application now appears Y2K Ready.

Bank and Budgetary System

The Bank & Budgetary System is used by the Investment Banking Division of the Treasurer's office to post monies collected from the various agencies to a general ledger and to supervise the disbursement of said money.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the Bank & Budgetary System. Based on the results of these procedures, the Bank & Budgetary System appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the system appears Y2K Ready.

Retirement System: Refund Payroll

The Refund Payroll application is used by the Retirement Division of the Treasurer's office for the reimbursement of retirement payroll deductions, collected by the state, to state employee that do not reach retirement age with the State of North Carolina.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the Refund Payroll application. Based on the results of these procedures, the Refund Payroll application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	9

LOW LEVEL ERRORS

We noted nine low impact errors that have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, the errors do not impact the overall Y2K readiness opinion of the application.

No corrective action plan was required, and the application appears Y2K Ready.

Retirement System: Refund Transition

The Refund Transition application is used by the Retirement Division of the Treasurer's office to process and maintain records on the disposition of state employee retirement accounts wherein the employee voluntarily or involuntarily leaves state services before retirement.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the Refund Transition application. Based on the results of these procedures, the Refund Transition application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Retirement System: Retirement Payroll

The Retirement Division of the Treasurer's office uses the Retirement Payroll application to calculate and pay out on a monthly basis the benefits to the state retirees.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the Retirement Payroll application. Based on the results of these procedures, the Retirement Payroll application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Retirement System: Retirement Transition

The Retirement Transition application is used by Retirement Division of Treasurer's office to prepare retirees for the Retirement Payroll application.

Our procedures included an initial assessment, functional analysis, code analysis and error analysis of the Retirement Transition application. Based on the results of these procedures, the Retirement Transition application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	50

Following is high level description of the errors found as well as the impacts on the functionality of Retirement Transition application.

LOW LEVEL ERRORS

We noted fifty low impact errors that have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, the errors do not impact the overall Y2K readiness opinion of the application.

Since all the errors noted for this application were low impact, no corrective action plan was required, and the application appears Y2K Ready.

Department of Transportation

Summary of Results for the Department of Transportation

Below is a table that summarizes the results of the Y2K IV&V assessments for the Department of Transportation.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
3	3	0	1	0	0	7

Results by Application for the Department of Transportation

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the Department of Transportation.

Emissions System

The primary purpose of the Emissions System is to track vehicles that are required to be emissions tested. The Emissions System provides online transactional support for North Carolina's inspection stations. It processes all data recorded on all smog stations in the state. It then sends compliance information to the state Division of Motor Vehicles (DMV) office for compliance/non-compliance updates.

MCI Worldcom was awarded the contract to handle the majority of the processing of the Emissions System on October 14, 1997. Their base of operation is in Sacramento, California and the architecture for the system consists of two networks: an MCI 800 network, and an MCI Wide Area Network (WAN). The Emissions System was implemented as a part of the Inspection and Maintenance (I/M) Emission Automation Project with the combined efforts of the DMV, Information Systems Technology (IST), and MCI.

The Emissions System is a client server application residing on 4 Sun Microsystems Servers running Solaris 2.6 plus US Robotics Modem banks and Livingston Portmasters which supply the network connections to customers.

Our procedures included a high level review of the year 2000 readiness of the Emissions System application. We received the vendor compliance letter for the Emissions System application from DOT and testing documentation from MCI. We evaluated this documentation to identify the existence and reasonableness of the following:

- Objective of Project
- Scope of Project
- Detailed Remediation Approach
- Listing of Remediation Procedures & Resources Used
- Detailed Testing Approach
- Listing of Testing Procedures & Resources Used

- Test Results Key
- Results of Testing (expected results versus actual results of various test case scenarios)
- Interpretation of Test Results
- Implementation of application into the production environment
- Conclusion: Opinion based on the test results

This was a due diligence assessment, and based on the results of the procedures performed, the Emissions System application receives a "Due Diligence Fully Demonstrated" opinion related to its Y2K readiness. Below is a summary of the findings that support this opinion.

1. The documentation received from DOT and MCI met all of the OSA identified criteria above.

2. A summary of the Emissions System test results showed all four functional areas identified by MCI as having passed the five tests identified and performed by MCI.

Since this application received a "Due Diligence Fully Demonstrated" opinion, no additional action was required on behalf of DOT to raise our level of confidence regarding the application's Y2K readiness.

Highway Construction and Maintenance System

The Highway Construction and Maintenance System (HiCAMS) is used by the Department of Transportation to support construction administration, field operations, and material testing. The HiCAMS application enables timeliness and availability of information resulting in prompt payment to contractors, integrated construction and materials and testing functions, and provides timely access to construction information for external parties.

Our procedures included an initial assessment, functional analysis, code analysis and errors analysis of the HiCAMS application. Based on the results of these procedures, the HiCAMS application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

DOT Payroll System and SIPS Interface System

The Department of Transportation Payroll System is being used to process the payroll for the agency personnel. This system deals with not only the regular biweekly payroll of the department but also other payrolls such as disability payroll, law allowance payroll and some need based payrolls such as bonus, severance, moving expenses, tuition expenses etc. The payroll system interfaces mainly with the personnel system, fiscal system and also banks and insurance companies. The Payroll System also interfaces with a system maintained by Information Technology Services, which generates the Bank Pre-note tape for the payroll direct

deposits. For the purposes of this report, this interface is referred to as the SIPS Interface System.

Our procedures included an initial assessment, functional analysis, code analysis, functional testing and validation of critical functions of the Payroll and SIPS Interface Systems. Based on the results of these procedures, the Payroll System appears Y2K Ready, and the SIPS Interface System appears to be Y2K Ready with minor modifications.

Below is a summary of the types of errors found during the course of our assessment:

Payroll System

Error Classification	Emergency	High	Medium	Low
Number of Errors	2	0	0	88

These errors had the following impacts on the functionality of Payroll System.

EMERGENCY IMPACT ERRORS

Errors that cause a stoppage in IV&V testing are classified as "Emergency". One of the emergency errors in the payroll system was caused due to non-update of 27 pay period programs/ tables, and the other was due to an incorrect reference of date macro causing an abnormal end of the program producing the 401K output tape. These errors were fixed by the agency and the testing cycles were re-run successfully. Emergency errors have no effect on the opinion of Y2K Readiness of the application since they have been corrected and re-tested during the IV&V.

LOW IMPACT ERRORS

We noted 88 low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports) or have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

SIPS Interface System

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	1	0

This error had the following impacts on the functionality of SIPS Interface System.

MEDIUM IMPACT ERRORS

A date variable calculation error in the program producing the Pre-note report and the Bank Pre-note tape resulted in incorrect processing of the Payroll direct deposits. The code must be corrected to ensure Y2K readiness.

For the DOT Payroll System, no corrective action plan was required, and the application appears Y2K Ready. For the SIPS Interface System, DOT has submitted a corrective action plan to address the one medium error and reports that the application now appears Y2K Ready.

Permits System

The Permits System is used by the Department of Transportation to issue permits for various types of transportation in North Carolina.

Our procedures included an initial assessment, functional analysis, code analysis, error analysis, and functional testing of the Permits System. Based on the results of these procedures, the Permits System appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	1

LOW IMPACT ERRORS

We noted one low impact error that is mainly cosmetic in nature (affects the manner that dates appear on screen or on reports) or has a very minor impact on the application functionality. The Agency may wish to consider correcting this error to improve the cosmetics and accuracy of the application. However, this error does not impact the overall Y2K readiness opinion of the application.

Since the error noted for this application was low impact, no corrective action plan was required, and the application appears Y2K Ready.

State Automated Drivers License Application

The North Carolina State Automated Drivers License application is a custom computer application designed for the North Carolina Division of Motor Vehicles (DMV). The application is a group of related programs running on an IBM mainframe computer located at the Information Technology Services (ITS) facility in Raleigh. Computer terminals are located at Drivers License/DMV offices across the state and are linked to ITS via special high-speed telephone lines. Four sections of the North Carolina DMV are linked to one computer network:

- Driver License,
- Enforcement,
- Vehicle Registration, and
- Customer Information.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the Drivers License application. Based on the results of these procedures, the Drivers License application appears Y2K ready with minor modifications.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	5	15

MEDIUM IMPACT ERRORS

We noted five medium impact errors that have the functional impacts on the application explained in the following paragraphs.

One Program uses logic to compare dates without a century value. When two dates are compared without a century value, an unintended logic error can occur.

DLF7052B could result in a problem of drivers license suspension not being completed on time.

Two programs had two separate occurrences of logic to subtract an amount from a year without a century value. This logic could possibly result in miscalculations when the amount subtracted is larger than the year. For example, subtracting 2 from the year 00 could result in –02 instead of 98, which is the intended result.

DLF0106B incorrect year of birth could be calculated for driver's license.

DLF0106O incorrect year of birth could be calculated for driver's license.

LOW IMPACT ERRORS

We noted fifteen low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports) or have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

DOT has submitted a corrective action plan to address the five medium severity and fifteen low severity errors and reports that the application now appears Y2K Ready.

State Titling and Registration System

The North Carolina State Titling and Registration System is a CICS/DB2 mainframe application coded by DOT-MIS in Assembler, COBOL II, and Easytrieve Plus. This system uses the vendor products Vena, Tax Value, and Finalist. The primary function of the Titling subsystem is to:

- Record Ownership of a vehicle;

- Record liens against a vehicle; and
- Produce a title document for a customer that will uniquely identify a vehicle, list owners of a vehicle and list all liens recorded against a vehicle.

All vehicles to be registered and operated in North Carolina must first be titled in North Carolina.

The primary function of the Registration subsystem is to issue operating authorities so that vehicles can legally operate on North Carolina roadways for a specific period of time. Vehicle Registration is indicated by the presence of a license plate and a registration card.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the State Titling and Registration System application. Based on the results of these procedures, the State Titling and Registration System application appears Y2K Ready with Minor Modifications.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	21	2

MEDIUM IMPACT ERRORS

We noted twenty-one medium impact errors that have the following impacts on application functionality.

Five programs contained logic that compared dates without a century value. When two dates are compared without a century value, an unintended logic error can occur.

- VFBCK13I Could produce an incorrect credit rating.
- VIBCLI91 had two occurrences of errors that could result in false turn in dates for license plates.
- VROCRR43 Inaccurate registration records.
- VROCWT06 Incorrect expiration dates of farm use plates.
- VROPLT05 had two occurrences of errors that could prevent the expiration date from being calculated in the module.

Four programs used logic to subtract an amount from a year. This logic could possibly result in miscalculations when the amount subtracted is larger than the year itself.

- VIBCYU81 had two occurrences of errors, which could produce incorrect inventory totals in management reports.

- VIBFIC88 had two occurrences of errors that could produce incorrect inventory totals in management reports.

- VROREG03 Calculation of expiration dates could be prevented in this module.

- VROPLT05 Calculation of expiration dates could be prevented in this module.

Two programs had logic that compared a year instead of a whole date. This could represent a potential Year 2000 failure.

- VROHPL11 Spaces could be moved to expiration dates on registration.

- VNOIC00 Police offices would not be able to get information plates because this could affect the retrieval data.

Two programs had logic that moved a preset value to a century variable without checking the corresponding year value.

- VROREG03 Truck vehicles could have an expiration date of 1900.

- VTOPRT53 This program had four occurrences of errors that could cause a possible display problem as well as move 1900 into the database for titles.

One program contained a condition of hard coded "19"used as the century for a date in the 21st century.

- VRODPP40 If the date is not calculated properly the program would probably not access a Stop Call Module used in the emissions application.

LOW IMPACT ERRORS

We noted two low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports) or have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

DOT has submitted a corrective action plan to address the twenty-one medium severity and two low severity errors and reports that the application now appears Y2K Ready.

East Carolina University

Summary of Results for the East Carolina University

Below is a table that summarizes the results of the Y2K IV&V assessments for the East Carolina University.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
0	1	0	0	0	0	1

Results by Application for the East Carolina University

Below is a summary of the Y2K readiness assessment results for the mission critical computer application at the East Carolina University.

Student Information System

The Student Information System application is used by East Carolina University to support student admissions, student registration, student reporting, and other university information processing.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the Student Information System application. There are two Web based modules included in the Student Information System that were evaluated by conducting a functional test. Based on the results of these procedures, the Student Information System application appears Y2K Ready with Minor Modifications.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	5	11

MEDIUM IMPACT ERRORS

Two modules (CE008 and RG004) contained logic that compared dates without a century value. When two dates are compared without a century value, an unintended logic error can occur.

- The logic error in modules CE008 and RG004 involved a comparison to a date in the DB2 Athletic Table. This invalid comparison would fail to add a student athlete to a temporary reporting table. The end result would be that the Athletic

department would not automatically receive a hardcopy grade report for the student athletes. The Athletic department would still be able to examine and print the grade reports for the student athletes from the Student Information System.

Two modules (IR859 and IR890) contained logic that compared dates with different formats. When two dates are compared with different formats, an unintended logic error can occur.

- The logic error in modules IR859 and IR890 involve a comparison of high school graduation year. This invalid comparison would result in an incorrect calculation. The end result is that the High School graduation year would be missing from the General Administrative Report. (The report would say that there was no High School graduation year.) The High School graduation year would still be available from the Student Information System.

One module (HO002M_GET_DORMOCC) contained logic that moved a literal '19' for the century. Moving a literal '19' for the century can cause a logic failure in Year 2000.

- The logic error in module HO002M_GET_DORMOCC caused an error on the screen of the Housing module. This error would not display the Spring 2000 housing assignment from the summary screen. However, if the person went from the summary screen to the detail screen, the Spring 2000 housing assignment would display properly.

LOW IMPACT ERRORS

We noted eleven low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on a screen or on a report header) or have a very minor impact on the application functionality. The University may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

East Carolina University has submitted a corrective action plan to address the five medium severity and eleven low severity errors and reports that the application now appears Y2K Ready.

Employment Security Commission

Summary of Results for the Employment Security Commission

Below is a table that summarizes the results of the Y2K IV&V assessments for the Employment Security Commission.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
2	0	0	0	0	0	2

Results by Application for the Employment Security Commission

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the Employment Security Commission.

Unemployment Insurance Benefits System

The Unemployment Insurance Benefits System (UI Benefits system) is used to make subsistence payments to workers during periods of involuntary unemployment. Timely subsistence payments maintain a degree of purchasing power for the individual worker and help to counter deflationary reactions in the State's economy.

Our procedures included an initial assessment, functional analysis, code analysis, error analysis, and functional testing of the UI Benefits system. Based on the results of these procedures we believe the likelihood is high that the UI Benefits system is Y2K Ready.

Below is a summary of the types of errors found during the course of validation testing:

Error Classification	Emergency	High	Medium	Low
Number of Errors	2	0	0	11

EMERGENCY IMPACT ERRORS

We noted two emergency impact errors. Each involved a hard coded '19' in the century date field resulting in a failure of the program. In each case, the programs did not process any data. The programs have been changed to add windowing to set the century date field correctly and were successfully retested during the course of the assessment. Therefore, they do not affect the Y2K readiness opinion of the application.

LOW IMPACT ERRORS

We noted eleven low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports) or have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

Since the outstanding errors found are all low severity errors, no corrective action plan is required, and the application appears Y2K Ready.

Unemployment Insurance Tax System

The Unemployment Insurance Tax System (UI Tax system) is used in the collection of unemployment insurance tax payments from employers and the transfer of unemployment insurance tax funds to the Federal Unemployment Insurance trust fund.

Our procedures included an initial assessment of the UI Tax system, review of the processes that ESC used to remediate the system, analysis to identify the system's critical business functions, automated code analysis, and analysis of each Y2K error detected by the automated code analyzer. We did not perform validation testing of the system or a detailed inspection of the ESC's test plans and results. Based on the results of these procedures, the ESC UI Tax system appears Y2K Ready.

Below is a summary of the types of errors found in analyzing the results of the automated code analysis of the ESC UI Tax system:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	32

LOW IMPACT ERRORS

We noted thirty-two low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports) or have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

Since the errors noted were only low severity errors, no action plan was required, and the application appears Y2K Ready.

Housing Finance Agency

Summary of Results for the Housing Finance Agency

Below is a table that summarizes the results of the Y2K IV&V assessments for the Housing Finance Agency.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
1	1	0	0	0	0	2

Results by Application for the Housing Finance Agency

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the Housing Finance Agency.

Mortgage Revenue Bond and Mortgage Credit Certificate Systems

The North Carolina Housing Finance Agency uses the Mortgage Revenue Bond and Mortgage Credit Certificate Systems. The Home Ownership Mortgage Loan Program (MRB) offers mortgages to first-time home buyers with low and moderate incomes at an interest rate below conventional rates. It is funded by tax-exempt bond sales. Funds are available throughout the year until exhausted. The Mortgage Credit Certificate (MCC) Program provides an alternative to the Home Ownership Mortgage Loan Program. MCCs reduce the federal income tax liability which homebuyers pay and thus leaves them with more disposable income to qualify for a market-rate mortgage.

Our procedures included an initial assessment, functional analysis and code analysis of the Mortgage Revenue Bond and Mortgage Credit Certificate Systems. Based on the results of these procedures, the Mortgage Revenue Bond System appears Y2K Ready and Mortgage Credit Certificate System appears to be Y2K Ready with minor modifications.

Below is a summary of the types of errors found during the course of our assessment:

Mortgage Revenue Bond (MRB) System

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	12

These errors had the following impacts on the functionality of Mortgage Revenue Bond System.

LOW IMPACT ERRORS

We noted twelve low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports) or have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

Since the errors found are of low severity, no corrective action plan was required, and the application is Y2K Ready.

Mortgage Credit Certificate (MCC) System

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	1	5

These errors had the following impacts on the functionality of Mortgage Credit Certificate system.

MEDIUM IMPACT ERRORS

A quarterly report sent to IRS containing details of mortgage credit certificates (including details like period, number, credit amount, and bond issue) will only produce header and no details in year 2000.

LOW IMPACT ERRORS

We noted five low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports) or have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

HFA has submitted a corrective action plan that addresses the medium severity error and reports that the application now appears Y2K Ready.

North Carolina A & T State University

Summary of Results for the North Carolina A & T State University

Below is a table that summarizes the results of the Y2K IV&V assessments for the North Carolina A & T State University.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
1	0	0	0	0	0	1

Results by Application for the North Carolina A & T State University

Below is a summary of the Y2K readiness assessment results for the mission critical computer application at the North Carolina A & T State University.

Diebold/One Card System

The Diebold/One Card System is an all-campus identification card system with debit accounts, patron purchased privileges, and card access aimed at simplifying existing transaction processes and delivering new card based services to the campus community. The debit accounts currently included for tracking as servicing with the One Card system are bookstore purchases, book vouchers, ticket office purchases, vending, laundry, and meal purchases. Patron purchased privileges includes meal plans and health and athletic fees. Card access is controlled for dormitories, administrative buildings, labs, art gallery, etc.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the Diebold/One Card System. Based on the results of these procedures the Diebold/One Card System appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

North Carolina Community College System Office

Summary of Results for the North Carolina Community College System Office

Below is a table that summarizes the results of the Y2K IV&V assessments for the North Carolina Community College System Office.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
3	0	0	0	0	0	3

Results by Application for the North Carolina Community College System Office

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the North Carolina Community College System Office.

Continuing Education System

The Continuing Education System is used by the 58 colleges that make up the North Carolina Community College System. The system is designed to capture, update, and report information on the Continuing Education students including grade maintenance, master course file, instructor master file, contract master file, student master file, transcript file, class location file, and directors file. This system was evaluated individually using consolidated scheduling and resource allocations with the NCCCSO Curriculum Student Records System and the NCCCSO Financial System.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the NCCCSO Continuing Education System. Based on the results of these procedures, the Continuing Education System appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	7

Following is a high level description of the errors found as well as the impacts on the functionality of the Continuing Education System.

LOW IMPACT ERRORS

We noted seven low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports). The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

Since the errors noted were only low impact errors, no corrective action plan was required, and the application appears Y2K Ready.

Curriculum Student Records System

The Curriculum Student Records System is used by the 58 colleges that make up the North Carolina Community College System. The system was designed to capture, update, and report information on the curriculum students to include Admissions, Registration, Reporting, and Graduation Progress. This system was evaluated individually using consolidated scheduling and resource allocations with the NCCCSO Continuing Education System and the NCCCSO Financial System.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the NCCCSO Curriculum Student Records System. Based on the results of these procedures, the Curriculum Student Records System appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	352

Following is a high level description of the errors found as well as the impacts on the functionality of the Continuing Education System.

LOW IMPACT ERRORS

We noted 352 low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports). The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

Since the errors noted were only low impact errors, no corrective action plan was required, and the application appears Y2K Ready.

Financial System

The Financial System is used by the 58 colleges that make up the North Carolina Community College System. The system is designed to track general ledger data, purchase goods and services, provide accounts payable and receivable functions, provide payroll functions, track student financial aid information, track equipment items, and provide college staffing data in the North Carolina Community College System Office. This system was evaluated individually using consolidated scheduling and resource allocations with the NCCCSO Curriculum Student Records System and the NCCCSO Continuing Education System.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the NCCCSO Financial System. Based on the results of these procedures, the Financial System appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	91

Following is a high level description of the errors found as well as the impacts on the functionality of the Continuing Education System.

LOW IMPACT ERRORS

We noted 91 low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports). The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

Since the errors noted were only low impact errors, no corrective action plan was required, and the application appears Y2K Ready.

North Carolina State University

Summary of Results for the North Carolina State University

Below is a table that summarizes the results of the Y2K IV&V assessments for the North Carolina State University.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
6	0	0	2	0	0	8

Results by Application for the North Carolina State University

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the North Carolina State University.

University Dining Charge Card System

The University Dining Charge Card System is used by North Carolina State University to support the student ID card process. This system is a single card system that allows students to use their identification cards for a variety of campus activities, including purchases at the campus bookstore, cafeteria vending, laundry, and access to North Carolina State University facilities.

Our procedures included a compliance audit of the year 2000 readiness of the University Dining Charge Card System. This compliance audit leveraged interviews with the University Dining Charge Care Subject Matter Expert (SME) to review the following:

- The University Dining Charge Card System components (hardware and software).
- Review of the Year 2000 compliance statement of Diebold, Incorporated.

The review was a due diligence assessment, and based on the results of the procedures performed, the University Dining Charge Card System receives a "Due Diligence Fully Demonstrated" opinion related to its Y2K readiness. Below is a summary of the findings that support this opinion.

1. North Carolina State University personnel have performed an upgrade to the vendor recommended year 2000 version of all software and hardware.

2. Diebold has issued a Y2K readiness disclosure statement for each component.

3. Diebold has not published any evidence of integrated system testing. However, Diebold has provided the University with a year 2000 test plan of the Series/5 System.

4. There is no documentation of the Y2K contingency plan for the operations surrounding the University Dining Charge Card System. However, in the event the system becomes inoperable because of the year 2000, the University will allow the students to make charges as normal. The transactions will not be entered into the student account until the year 2000 problem has been resolved.

Since the application received a "Due Diligence Fully Demonstrated" opinion, no additional action was required on behalf of NCSU to raise our level of confidence regarding the applications Y2K Readiness.

Capital Improvement Project Tracking and Accounting Application

The Capital Improvement Project Tracking and Accounting application is used by North Carolina State University Facilities Planning and Design & Construction Management departments to track the design and construction phases of capital improvement and informal projects. The application is also used by the Budget Office to keep track of budgetary allocations and expenditures for a capital improvement project.

Our procedures included an initial assessment, functional analysis, code analysis and error analysis of the Capital Improvement Project Tracking and Accounting application. Based on the results of these procedures, the Capital Improvement Project Tracking and Accounting application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors Tracking Module	0	0	0	0
Number of Errors Accounting Module	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Facilities Management Enterprise Application

The Facilities Management Enterprise application is used by North Carolina State University to support and maintain the physical plant located at the North Carolina State University campus.

Our procedures included an initial assessment, and functional testing of the Facilities Management Enterprise application. Based on the results of these procedures, the Facilities Management Enterprise application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Financial Accounting System

The Financial Accounting System (FAS) application is used by North Carolina State University to produce State required reports for the accounting/finance department.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the FAS application. Based on the results of these procedures, the FAS application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Student Admission Application

The Student Admission application is used by North Carolina State University to support the student admissions process including applications, reporting and student information management.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the Student Admission application. Based on the results of these procedures, the Student Admission application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Student Financial Aid Application

The Student Financial Aid application is used by North Carolina State University to support and maintain student financial aid data. This includes managing formulas and parameters for each

school year enrollment period. Student Financial Aid application uses PowerFAIDS™ software Version 4.2 developed by CSS Software Services.

Our procedures included an initial assessment and functional testing of the Student Financial Aid application. Based on the results of these procedures, the Student Financial Aid application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Student Loans Application

The Student Loans application is used by North Carolina State University to support the student loans process with respect to billing, receiving payments and crediting the student loans accounts. The operation of the student loans billing and collection services is outsourced to AFSA Data Corporation. The conversion to the AFSA Data Corporation student loans processing was completed in August 1999.

Our procedures included a compliance audit of the year 2000 readiness of the University Student Loans processes. This compliance audit leveraged interviews with University Student Loans Subject Matter Expert (SME) and review of the year 2000 compliance statement of the AFSA Data Corporation Student Loans application.

This review was a due diligence assessment, and based on the results of the procedures performed, the North Carolina State University Student Loan application receives a "Due Diligence Fully Demonstrated" opinion related to its Y2K readiness. Below is a summary of the findings that support this opinion.

1. AFSA Data Corporation has issued a statement of year 2000 compliance. The statement addresses that AFSA has "remediated all of their internal systems, completed testing, and returned the systems to normal production. All of AFSA's internal systems accurately process dates both before and after Year 2000 rollover, and properly recognize the Year 2000 as a leap year."

2. Prior to entering into an outsourcing contract with AFSA Data Corporation, the University Student Loans SME said that due diligence and testing was completed regarding year 2000 processing, and the University was satisfied that the AFSA Data Corporation Student Loans application will correctly process year 2000 dates/data. The University did not keep the documentation that demonstrates the due diligence year 2000 test results.

3. After entering into an outsourcing contract with AFSA Data Corporation, the University tested the functionality prior to converting to the new application. During the testing and verification of the functionality the University SME reviewed the test results produced by AFSA Data Corporation and is satisfied that the AFSA Data Corporation

Student Loans application correctly processes year 2000 dates/data. Affiliated Computer Services could not verify the test results documentation.

Since the application received a "Due Diligence Fully Demonstrated" opinion, no additional action was required on behalf of NCSU to raise our level of confidence regarding the applications Y2K Readiness.

Student Scheduling/Registration Application

The Student Scheduling/Registration application is used by North Carolina State University to support the student registration process including course listing, course sign-up, drop/add, etc.

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the Student Scheduling/Registration application. Based on the results of these procedures, the Student Scheduling/Registration application appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	1

LOW IMPACT ERRORS

We noted one low impact error that is mainly cosmetic in nature (affects the manner that dates appear on a report). The University may wish to consider correcting this error to improve the cosmetics and accuracy of the application. However, this error does not impact the overall Y2K readiness opinion of the application.

Since the error noted was a low impact error, no corrective action plan was required, and the application appears Y2K Ready.

Office of the State Controller

Summary of Results for the Office of the State Controller

Below is a table that summarizes the results of the Y2K IV&V assessments for the Office of the State Controller.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
2	1	0	0	0	0	3

Results by Application for the Office of the State Controller

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the Office of the State Controller.

Central Payroll System

The Office of the State Controller's Central Payroll System is an online and batch application used to track all State employees and retirees salary information and process all State payroll checks.

Our Y2K Readiness assessment procedures included an initial assessment, functional analysis, and code inspection of Central Payroll. Based on the results of these procedures, Central Payroll appears Y2K Ready.

Below is a summary of the types of problem date items found during the course of our assessment and the level of their operational severity:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Cash Management Control System

The Cash Management Control System (CMCS) is an on-line information system for recording daily transactions against the budgetary accounts of North Carolina State agencies. CMCS users in State departments, agencies, and institutions, access the system daily to certify the deposit of State funds and to requisition funds to pay for goods and services procured by the State. The transactions entered into CMCS are processed and posted against accounts maintained by the Department of State Treasurer and the Office of the State Controller.

Our Y2K Readiness assessment procedures included an initial assessment, functional analysis, and code inspection of the CMCS. Based on the results of these procedures, the CMCS appears Y2K Ready with minor modifications.

Below is a summary of the types of problem date items identified during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	1	5

MEDIUM IMPACT ERRORS

A "Medium" level error was located in Program AK402 under the CMCS core function, 'Provide Account Balances.' This error would result in the Department of State Treasurer not receiving needed 'approved transaction' files. Once identified, this problem was reviewed by the CMCS maintenance programmer and has since been corrected.

LOW IMPACT ERRORS

We noted five low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports) or have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

The Office of the State Controller has submitted a corrective action plan to address the one medium severity and five low severity errors and report that the application now appears Y2K Ready.

North Carolina Accounting System

The Office of the State Controller's North Carolina Accounting System (NCAS) is the central financial system for the State of North Carolina. It provides general ledger control over the State's financial transactions, resource balances, and subsidiary accounts and records. NCAS provides financial statements and reports reflecting the current condition of all State agency accounts and assists the central manager in maintaining financial control over State government operations.

Our Y2K Readiness assessment procedures included an initial assessment, functional analysis, and code inspection of North Carolina Accounting System. Based on the results of these procedures, North Carolina Accounting System (NCAS) appears Y2K Ready.

Below is a summary of the types of problem date items found during the course of our assessment and the level of their operational severity:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	1

LOW IMPACT ERRORS

We noted one low impact error that is mainly cosmetic in nature (affects the manner that dates appear on screen or on reports) or has a very minor impact on the application functionality. The Agency may wish to consider correcting this error to improve the cosmetics and accuracy of the application. However, this error does not impact the overall Y2K readiness opinion of the application.

Sine the error noted was a low impact error, no corrective action plan was required, and the application appears Y2K Ready.

UNC Hospitals

Summary of Results for the UNC Hospitals

Below is a table that summarizes the results of the Y2K IV&V assessments for the UNC Hospitals.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
0	0	0	3	0	0	3

Results by Application for the UNC Hospitals

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the UNC Hospitals.

GEAC HR:M Application

The Geac HR:M application is used by approximately 75 users to process payroll and personnel information. The UNC Hospitals departments that make up this user group include Nursing employment, Hospital employment, Personnel, and Fiscal.

Our procedures for this engagement included an assessment of the Information Systems Division's (ISD's) Year 2000 project team strategy, construct, and processes for the Geac HR:M application. Specifically, we reviewed the following:

- Vendors Year 2000 documentation and remediation plans
- UNC Hospitals' implementation and testing strategy
- Component and system testing processes and procedures
- Samplings of test plans and results
- Procedures in place for errors detection and analysis and tracking
- Assessing quality assurance measures in place

This was a due diligence assessment, and based on our review of remediation strategies and practices in place, the GEAC HR:M application receives a "Due Diligence Fully Demonstrated" opinion. No additional action was required to provide additional assurance of the application's Y2K readiness.

LAWSON INSIGHT Application

The LAWSON INSIGHT application encompasses Activity Management and Activity-Based Costing for the UNC Hospitals. The Activity Management module works in tandem with General Ledger to gather all financial and non-financial information. LAWSON INSIGHT is used by approximately 1400 users.

Our procedures for this engagement included an assessment of ISD's Year 2000 project team strategy, construct, and processes for the LAWSON INSIGHT application. Specifically, we reviewed the following:

- Vendors Year 2000 documentation and remediation plans
- UNC Hospitals' implementation and testing strategy
- Component and system testing processes and procedures
- Samplings of test plans and results
- Procedures in place for errors detection and analysis and tracking
- Assessing quality assurance measures in place

This was a due diligence assessment, and based on our review of remediation strategies and practices in place, the LAWSON INSIGHT Application receives a "Due Diligence Fully Demonstrated" opinion. No additional action was required to provide additional assurance of the application's Y2K readiness.

SMS Invision Application

The SMS Invision application is used by over 400 departments and 54 clinics within UNC Hospitals for patient management and patient accounting purposes. Some of the departments that make up this user group include Medical Records, Radiology, Cardiology, Laboratory, Patient Accounting, Registration, and Food and Nutrition.

Our procedures for this engagement included an assessment of ISD's Year 2000 project team strategy, construct, and processes for the SMS Invision application. Specifically, we reviewed the following:

- Vendors Year 2000 documentation and remediation plans
- UNC Hospitals' implementation and testing strategy
- Component and system testing processes and procedures
- Samplings of test plans and results
- Procedures in place for errors detection and analysis and tracking
- Assessing quality assurance measures in place

This was a due diligence assessment, and based on our review of remediation strategies and practices in place, the application receives a "Due Diligence Fully Demonstrated" opinion. No additional action was required to provide additional assurance of the application's Y2K readiness.

University of North Carolina - Asheville

Summary of Results for the University of North Carolina - Asheville

Below is a table that summarizes the results of the Y2K IV&V assessments for the University of North Carolina - Asheville.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
0	0	1	0	0	0	1

Results by Application for the University of North Carolina - Asheville

Below is a summary of the Y2K readiness assessment results for the mission critical computer application at the University of North Carolina - Asheville.

SCT Plus2000 Application

The SCT Plus2000 application is used by the different departments of the various state universities in North Carolina. The application is quite comprehensive and is used to manage all university financial, human resources, student, and alumni matters. The application consists of five sub-applications: Student Information System (SIS), Financial Record System (FRS), Human Resource System (HRS), Alumni Develop System (ADS) and Z Core System (ZSS).

Our procedures included an initial assessment, functional analysis, code analysis, and error analysis of the SCT Plus2000 application. Based on the results of these procedures, the SCT Plus2000 application appears to be Not Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

SCT Module	**Emergency Impact**	**High Impact**	**Medium Impact**	**Low Impact**
SIS	0	5	0	4
FRS	0	0	0	1
HRS	0	1	1	1
ADS	0	0	0	0
ZSS	0	1	0	0
Total:	**0**	**7**	**1**	**6**

Following is a high level description of the errors found and the impact on the functionality of the UNCA system, broken down by application:

SIS

HIGH IMPACT ERRORS

DATE COMPARISON

There is one instance of a comparison performed on date fields that do not contain the century thus the date values will not compare correctly. As a result of this comparison the Aged Receivable Listing report will contain incorrect data.

DATE CALCULATION

There are four instances of a calculation performed on date fields that do not contain the century thus the year values will not calculate correctly. This will affect the process that adds new financial aid students from the Outside Aid Resource (OAR) files. The creation of the Package Aide Resource System (PARS) master file, student notices that are required by the financial aid office and the Aging Disbursements Report will also be affected.

LOW IMPACT ERRORS

We noted four low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports) or have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

FRS

LOW IMPACT ERRORS

We noted one low impact error that is mainly cosmetic in nature (affects the manner that dates appear on screen or on reports) or has a very minor impact on the application functionality. The Agency may wish to consider correcting this error to improve the cosmetics and accuracy of the application. However, this error does not impact the overall Y2K readiness opinion of the application.

HRS

HIGH IMPACT ERRORS

DATE OFFSETS

There is one instance of a declaration of the year component before the century component. The situation causes a transaction to be generated incorrectly which will affect the assignment segment of the HRS master file.

MEDIUM IMPACT ERRORS

DATE ASSIGNMENTS

There is one instance of a year field being initialized with 00. As a result, the program, when checking for fiscal year 2000, will think the field is not populated. This will affect the on-line update procedure for human resource files.

LOW IMPACT ERRORS

We noted one low impact error that is mainly cosmetic in nature (affects the manner that dates appear on screen or on reports) or has a very minor impact on the application functionality. The Agency may wish to consider correcting this error to improve the cosmetics and accuracy of the application. However, this error does not impact the overall Y2K readiness opinion of the application.

ADS

There were no errors found for the ADS application.

ZSS

HIGH IMPACT ERRORS

DATE COMPARISON

There is one instance of a comparison performed on date fields that do not contain the century. The comparison between the year fields will not compare correctly. As a result, the purge program may delete data from the files that should be kept. SCT has issued a Time of Solution (TOS) fix, however this TOS was not applied by UNCA prior to assessment.

UNC – Asheville is working with the application vendor (SCT) to get the errors corrected that we have noted in this report. The vendor has made the all application repairs to address the seven high severity, one medium severity, and six low severity errors and is currently testing the repaired code. The vendor states that the repaired code will be available to the universities by October 15, 1999 and will notify the universities when the code is ready for installation at the university sites. It will be up to each of the universities to install the updates once they are available from the vendor. The vendor states that with these updates the SCT Plus2000 application appears Y2K Ready.

University of North Carolina – Chapel Hill

Summary of Results for the University of North Carolina – Chapel Hill

Below is a table that summarizes the results of the Y2K IV&V assessments for the University of North Carolina – Chapel Hill.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
8	1	0	0	0	0	9

Results by Application for the University of North Carolina – Chapel Hill

Below is a summary of the Y2K readiness assessment results for the mission critical computer applications at the University of North Carolina – Chapel Hill.

Financial Reporting System

The UNC Financial Reporting System provides financial accounting services to UNC administrative staff. FRS also supports interfaces with several external organizations and third parties. FRS is a batch and online system consisting of 434 COBOL programs and 3,279 copybooks.

Our Y2K Readiness assessment procedures included an initial assessment, functional analysis, and code inspection of the Financial Reporting System. Based on the results of these procedures, the Financial Reporting System appears Y2K Ready.

Below is a summary of the types of problem date items identified during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Payroll Application

The UNC Payroll application processes personnel action forms (PD-105s and PD-107s) and time sheets in a batch environment. Payroll uses time sheets to calculate a paycheck for non-exempt employees while exempt University employees automatically receive a paycheck. Payroll maintains history files for personnel action forms, voluntary deductions, and check earnings. The system provides a feed to the University's Financial Reporting System (FRS) that includes all employer costs by account. It also produces a check reconciliation file for balancing accounts against the paid checks file sent from the Department of the State Treasurer. The

Payroll System also processes one-time payments, longevity payments, and leave payments for University employees.

Our Y2K Readiness assessment procedures included an initial assessment, functional analysis, and code inspection of the Payroll System. Based on the results of these procedures, the Payroll System appears Y2K Ready with minor modifications.

Below is a summary of the types of problem date items identified during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	8	0

MEDIUM IMPACT ERRORS

Two programs contained four "Medium" severity level errors each — Programs PP932B and PP934B. The date logic errors in these programs are a consequence of leaving these programs unchanged as their functionality was due to be replaced by September 1999 with functions included in the design of a new Human Resources Information System (HRIS) under development by UNC-Administrative Information Systems (AIS). The due date for the new HRIS to become operational has slipped, and therefore, UNC-AIS is now compelled to repair PP932B and PP934B to be Y2K Ready as a contingency. This repair effort is now underway according to UNC-AIS management.

UNC – Chapel Hill has submitted a corrective action plan to address the eight medium errors and reports that the application now appears Y2K Ready.

Physicians and Associates System

The UNC Physicians and Associates (P&A) System provides UNC physicians with billing and collection services, provides operational and financial reporting for almost 400,000 annual outpatient encounters and over 28,000 annual patient admissions, and supports interfaces with several external organizations and third parties.

Our Y2K Readiness assessment procedures included an initial assessment, functional analysis, and code inspection of the P&A System. Based on the results of these procedures, the P&A System appears Y2K Ready.

Below is a summary of the types of problem date items identified during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

Student Housing Application

The Student Housing System is used to record and maintain information for campus housing provided to the students of the University of North Carolina. The Housing Authority personnel are responsible for placing students in UNC housing and maintaining all records and related charges billed to the students account. The information maintained in the Student Housing System is posted to the University Cashiers' system weekly.

Our procedures included an initial assessment, functional analysis, code inspection, and functional testing of the Student Housing System. The system was tested in its' entirety through a full lifecycle test, which allowed century date variables and core functionality to be tested. Based on the results of these procedures, Student Housing appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	2	0	0	19

EMERGENCY IMPACT ERRORS

Two 'Emergency' severity level errors were identified through functional testing causing system aborts. These two errors were corrected and successfully re-tested during the cycle testing.

LOW IMPACT ERRORS

We noted nineteen low impact errors that are mainly cosmetic in nature (affect the manner that dates appear on screen or on reports) or have a very minor impact on the application functionality. The Agency may wish to consider correcting these errors to improve the cosmetics and accuracy of the application. However, these errors do not impact the overall Y2K readiness opinion of the application.

No corrective action plan was required, and the application appears Y2K Ready.

Student Information System

The UNC Student Information System (SIS) provides UNC administration with the ability to track admission, bill for services, track financial aid, maintain student records and registration information, and maintain the University's course inventory. This system encompasses the following five integrated applications:

- Student Admissions
- Billing and Receivables
- Student Financial Aid
- Records and Registration
- Course Inventory

SIS also supports interfaces with several external organizations and third parties. SIS is a batch and online system consisting of 1,309 COBOL programs and 16,356 copybooks.

Our Y2K Readiness assessment procedures included an initial assessment, functional analysis, and code inspection of the UNC SIS. Based on the results of these procedures, the SIS appears Y2K Ready.

Below is a summary of the types of problem date items identified during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No action plan was required, and the application appears Y2K Ready.

University of North Carolina – Pembroke

Summary of Results for the University of North Carolina – Pembroke

Below is a table that summarizes the results of the Y2K IV&V assessments for the University of North Carolina – Pembroke.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
1	0	0	0	0	0	1

Results by Application for the University of North Carolina – Pembroke

Below is a summary of the Y2K readiness assessment results for the mission critical computer application at the University of North Carolina – Pembroke.

Cashiering System

University of North Carolina at Pembroke uses the Cashiering System which deals with all moneys that come into the university including student payment of tuition fees, parking fines, campus bookstore sales, receipts from the performing arts center, etc. Payment, receipts, and other revenue are processed at the cashier's window. Information for each transaction is entered into the cashiering system along with an associated sub-code or account number. Sub-codes and account numbers are verified from data in the Financial Record System and Student Information System. This information is then stored on the Cashiering database file.

Our procedures included an initial assessment, functional analysis and code analysis of the Cashiering System. Based on the results of these procedures, the Cashiering System at University of North Carolina - Pembroke appears Y2K Ready.

Below is a summary of the types of errors found during the course of our assessment:

Error Classification	Emergency	High	Medium	Low
Number of Errors	0	0	0	0

No corrective action plan was required, and the application appears Y2K Ready.

University of North Carolina – Wilmington

Summary of Results for the University of North Carolina – Wilmington

Below is a table that summarizes the results of the Y2K IV&V assessments for the University of North Carolina – Wilmington.

Type of Y2K Readiness Assessment						Total Applications Reviewed for Department
Verification & Validation Assessments			Due Diligence Assessments			
Y2K Ready	Y2K Ready with Minor Modifications	Not Y2K Ready	DD Fully Demonstrated	DD Moderately Demonstrated	DD Not Demonstrated	
0	0	0	1	0	0	1

Results by Application for the University of North Carolina – Wilmington

Below is a summary of the Y2K readiness assessment results for the mission critical computer application at the University of North Carolina – Wilmington.

AT&T Campus Wide Debit Card Application

The AT&T CampusWide Debit Card serves as the university student identification card. It is also accepted for payment at all food service locations, the bookstore, student copiers, game room, health center, pharmacy, laundry rooms, post office and University Union Information Desk. The AT&T CampusWide Debit Card also serves as a door access card to unlock residence halls, and as a phone, debit, and meal card.

This engagement was a due diligence assessment. Our procedures for this engagement included an assessment of UNC Wilmington's Year 2000 project team strategy, construct, and processes. Our review focused on the following factors related to the AT&T CampusWide Debit Card vendor application:

- Vendors (AT&T and Hewlett Packard) Year 2000 documentation and remediation plans
- UNC Wilmington's strategy for implementing the Y2K compliant application, hardware, and operating system
- Assessing quality assurance measures taken.

This review was a due diligence assessment, and based on the results of the procedures performed, the UNC – Wilmington AT&T Campus Wide Debit Card System receives a "Due Diligence Fully Demonstrated" opinion related to its Y2K readiness. Below is a summary of the findings that support this opinion.

- UNC – Wilmington has contracted with highly reputable hardware and software vendors who have issued Y2K readiness statements guaranteeing the Y2K readiness of their products.

- UNC – Wilmington is staying current with hardware, software and operating system releases to ensure Y2K compliance as directed by the software vendor.

- Vendor remediation processes and testing strategies for Y2K testing appeared thorough.

APPENDIX A

APPLICATIONS REMOVED FOR CAUSE

Department	Computer Application	Reason for Removing
University of North Carolina - Chapel Hill	UNC One Card System	Coverage of this application was provided by our IV&V work on NC A&T's Diebold One Card System.
University of North Carolina - Wilmington	Electronic Funds Transfer	This application is being replaced by the Direct Lending application, which is currently in-production.
Department of Public Instruction	Dun & Bradstreet - External (DBSE)	Coverage of this application was provided by the IV&V work on the Office of the State Controller's North Carolina Accounting System (NCAS).
	Dun & Bradstreet - Internal (DBSI)	Coverage of this application was provided by the IV&V work on the Office of the State Controller's North Carolina Accounting System (NCAS).
	Uniform Education Reporting System	UERS is not a real application. It is a repository for data received from the Local Educational Agencies (LEAs).
Housing Finance Agency	Tax Credit	This application is being rewritten and redesigned to be Y2K compliant prior to Jan. 1, 2000.

APPENDIX B

STATE OF NORTH CAROLINA MISSION CRITICAL COMPUTER APPLICATIONS (126)

Department/Application	Notes
Administrative Office of the Courts	
Court Information System - Civil Case Processing System	
Court Information System - Criminal Infractions System	
Financial Management System - Cash Receipting System	
Department of Administration	
Courier Management System	
Motor Fleet Management System	
Department of Agriculture	
Food Distribution System	
Department of Commerce	
Accident and Coverage, Letters and A/R	
Medical Bill Approval	
State Agency Medical Bill Processing	
Department of Correction	
Offender Population Unified System (OPUS)	
Department of Crime Control & Public Safety	
Information Management System	
Department of Environment and Natural Resources	

Department/Application	Notes
CAMA System	
Drinking Water Compliance Monitoring	**2**
Federal Trust Fund System	
NC Agriculture Cost Share Program	**2**
Radioactive Materials System	
State Trust Fund System	
Tanning Application	
X-ray System	
Department of Health and Human Services	
Automated Collection and Tracking System (ACTS)	
Child Abuse and Neglect Application (CYA)	
Child Placement and Payment (PQA) Application	
Consolidated Contract Data System (CCDS)	
Electronic Benefits Transfer (EBT) Application	
Food Stamp Information System (FSIS)	
Health Services Information System (HSIS)	**2**
HEARTS - Healthcare Enterprise Accounts Receivable Tracking System	
Low Income Energy Assistance Program (LIEAP) Application	
Master Client Index (MCI) Application	
Master Facility Query and Reporting (MFQ) Application	
Master Facility System (MFR)	
Medicaid Accounting System (WDA)	
Medicaid Claims Processing Assessment (MCC) Application	

Department/Application	Notes
Medicaid Management Information System (MMIS)	**3**
Medical Cybernetics Plus Pharmacy System	
Social Security Reimbursement (VIA) Application	
Supplemental Social Security Data Exchange (VSD) Application	
Third Party Query (HWA) Application	
Work First and Medicaid (a.k.a. Eligibility Information System)	**2**
Department of Insurance	
Agent Licensing and Continuing Education System	
Department of Justice	
$.A Messages from FBI for CCH	**1**
Automated Fingerprint Information System (AFIS)	**1**
Case Records Management System (CRMS)	**1**
CCHPAK	**1**
CHQPAK	**1**
Computerized Criminal History (CCH)	**1**
DMV and AOC Interfaces from Law Enforcement Message System (LEMS)	**1**
FBI Hot File	**1**
FBI III Sync with NC CCH	**1**
FBI Inquiries for CCH	**1**
FBI Monthly Converted III Records for Ident	**1**
NLET Inquiries for CCH	**1**
QCHL	**1**

Department/Application	Notes
SBI Laboratory	**1**
Department of Labor	
Boiler Inspections System	
Elevator Inspections System	
Occupational Safety and Health Inspections System (OSHA)	
Department of Public Instruction	
ABC Tools Application	
Budgetary Allotment Application	
Budget Utilization and Development Application	
Cash Management	**2**
Child Nutrition Application	
EC HeadCount Report	**2**
Principal Monthly Report (PMR)	**2**
Salary Administration Application	
Student Information Management System (SIMS)	**2**
Department of Revenue	
EFT Application	**1**
Integrated Tax Administration System (ITAS)	**1, 2**
Revenue Collections and Analysis (RCA) System	**1**
Tartan Data Entry System	**1**
Department of State Treasurer	
Active Members Contribution System	
Bank & Budgetary System	

Department/Application	Notes
Retirement System: Refund Payroll Application	
Retirement System: Refund Transition Application	
Retirement System: Retirement Payroll Application	
Retirement System: Retirement Transition Application	
Department of Transportation	
Emissions System	**3**
Fiscal System	**2**
Highway Construction and Materials System (HICAMS)	
Payroll System	
Permits System	
SIPS Interface System	
State Automated Drivers License Application	
State Titling and Registration System Application	
Department of the Secretary of State	
Corporate Information Management System	
Securities Information System	
Uniform Commercial Code Information System and Federal Tax Lien System	
East Carolina University	
Student Information System	
Employment Security Commission	
Financial Accounting and Reporting System	**2**
Unemployment Insurance Benefits System	

Department/Application	Notes
Unemployment Insurance Tax System	
Housing Finance Agency	
Mortgage Credit Certificate	
Mortgage Revenue Bond	
North Carolina General Assembly	
Bill Tracking System	**1, 2**
Legislative Payroll System	**1, 2**
North Carolina A&T University	
Diebold/One Card System	
North Carolina Community College System Office	
Continuing Education System	
Curriculum Student Records System	
Financial System	
North Carolina State University	
Capital Improvement Project Tracking and Accounting Application	
Contracts and Grants System	**2**
Facilities Management Enterprise Application	
Financial Accounting System	
Student Admission Application	
Student Financial Aid Application	
Student Loans Application	
Student Scheduling/Registration Application	
University Dining Charge Card System	

Department/Application	Notes
Office of the State Controller	
Cash Management Control System	
Central Payroll System	
North Carolina Accounting System (NCAS)	
UNC – Asheville	
SCT Plus2000 Application	
UNC – Chapel Hill	
Billing Receivables	
Course Inventory	
Financial Reporting System	
Payroll Application	
Physicians and Associates System	
Records & Registration	
Student Admission	
Student Financial Aid	
Student Housing System	
UNC Hospitals	
GEAC HR:M	
Lawson Insight Application	
Shared Medical System (Invision) Application	
UNC – Pembroke	
Cashiering System	
UNC – Wilmington	

Department/Application	Notes
AT&T CampusWide Debit Card Application	

Notes Legend

1 – Mission Critical Application that was or will be tested by the Departments as approved by OSA

2 – Mission Critical Application that will be Reported in the second wave of IV&V 4Q99

3 – Outsourced Applications with High-Level Review by OSA

APPENDIX C

APPLICATIONS BEING IV&V'ED BY DEPARTMENTS

Department	Computer Application
Department of Justice	$.A Messages from FBI for CCH
	Automated Fingerprint Information System (AFIS)
	Case Records Management System (CRMS)
	CCHPAK
	CHQPAK
	Computerized Criminal History (CCH)
	DMV & AOC Interfaces from Law Enforcement Message System (LEMS)
	FBI Hot File
	FBI III Sync with NC CCH
	FBI Inquiries for CCH
	FBI Monthly Converted III Records for Ident
	NLET Inquiries for CCH
	QCHL
	SBI Laboratory
Department of Revenue	Integrated Tax Administration System (ITAS)
	Electronic Funds Transfer Application (EFT)
	Revenue Collection and Analysis (RCA) System
	Tartan Data Entry Application

Department	Computer Application
General Assembly	Bill Tracking System
	Legislative Payroll System

APPENDIX D

APPLICATIONS DEFERRED TO SECOND ROUND OF IV&V

Department	Computer Application
Department of Health and Human Services	Health Services Information System
	Work First and Medicaid (Eligibility Info Sys)
Department of Environmental and Natural Resources	Drinking Water Compliance Monitoring System
	NC Agriculture Cost Share Program
	Cash Management
	EC HeadCount Report
	PMR
	Student Information Management Sys
Department of Revenue	ITAS
Department of Transportation	Fiscal System
Employment Security Commission	Financial Accounting & Reporting System
North Carolina State University	Contracts & Grants Time/Effort
General Assembly	Bill Tracking System
	Legislative Payroll System

APPENDIX E

LIST OF Y2K IV&V VENDORS WITH CONTACT INFORMATION

Vendor and Address	Contact Information
Affiliated Computer Services (ACS) 150 Fayetteville Street Mall, #2740 Raleigh, NC 27601	Betsy Justus, Vice President - Business Development Phone: (919) 755-3311 Fax: (919) 828-5009
Complete Business Solutions, Inc. (CBSI) 32605 W. 12 Mile Farmington Hills, Michigan 48334	Arvind Malhotra, Director - Public Sector Phone: (919) 676-2433 Fax: (919) 821-1137
HMS Company 210 East Broad Street, Suite 207 Falls Church, Virginia 22046	Charles Hall, President Phone: (703) 532-3095 Fax: (703) 532-3081
IMI Systems, Inc. 2222 Chapel Hill-Nelson Highway, Suite 120 Durham, NC 27713	Richard Newns, Vice President Phone: (919) 572-2750 Fax: (919) 572-2656
Keane, Inc. 2525 Meridian Parkway, Suite 400 Durham, NC 27713	Tamara Anderson, Branch Manager Phone: (919) 544-0891 Fax: (919) 544-0895
OAO Corporation 2222 East Highway 54, Suite 210 Durham, NC 27713	Bill Wade, Vice President - Information Systems Services Division Phone: (919) 544-2737 Fax: (919) 544-1957
RAH Software Technology 3211-A Bramer Drive Raleigh, NC 27604	Robert Henry, President Phone: (919) 954-0030 Fax: (919) 954-7122
Sapiens Americas 2525 Meridian Parkway, Suite 300 Durham, NC 27713	Monica Wooden, Senior Vice President Phone: (919) 405-1700 Fax: (919) 405-1702

APPENDIX F

SUMMARY LIST OF ASSESSMENT RESULTS BY DEPARTMENT

Applications that have undergone source code scans or functional testing			
Department/Application	**Y2K Readiness Opinion**		
	Y2K Ready	**Y2K Ready with Minor Modifications**	**Not Y2K Ready**
Administrative Office of the Courts			
Cash Receipting System	X		
Civil Case Processing	X		
Criminal Infractions System		X	
Department of Administration			
Courier Management System	X		
Motor Fleet Management System		X	
Department of Agriculture			
Food Distribution System	X		
Department of Commerce			
Accident & Coverage, Letters, & A/R			X
Medical Bill Approval			X
State Agency Medical Bill Processing			X
Department of Correction			
OPUS		X	
Department of Crime Control and Public Safety			
Information Management System		X	

Applications that have undergone source code scans or functional testing			
Department/Application	**Y2K Readiness Opinion**		
	Y2K Ready	**Y2K Ready with Minor Modifications**	**Not Y2K Ready**
Department of Environmental and Natural Resources			
CAMA System		X	
Federal Trust Fund System	X		
Radioactive Materials System	X		
State Trust Fund System	X		
Tanning Application	X		
X-Ray Application	X		
Department of Health and Human Services			
ACTS		X	
Child Abuse and Neglect Application (CYA)	X		
Child Placement and Payment Application (PQA)			X
Consolidated Contract Data System (CCDS)	X		
Electronic Benefits Transfer (EBT)			X
Food Stamps Information System (FSIS)			X
Low Income Housing Energy Assistance Program (LIEAP)			X
Master Client Index Application (MCI)	X		
Master Facility Query & Reporting Application (MFQ)	X		
Master Facility System (MFR)	X		

Applications that have undergone source code scans or functional testing			
Department/Application	**Y2K Readiness Opinion**		
	Y2K Ready	**Y2K Ready with Minor Modifications**	**Not Y2K Ready**
Medicaid Claims Processing Assessment Application (MCC)	X		
Medicaid Accounting System (WDA)	X		
Supplemental Social Security Data Exchange Application (VSD)	X		
Third Party Query Application (HWA)		X	
Social Security Reimbursement Application (VIA)		X	
Department of Insurance			
Agent Licensing & Continuing		X	
Department of Justice			
$.A Messages from FBI for CCH	X		
Automated Fingerprint Information System (AFIS)	X		
Case Records Management System (CRMS)	X		
CCHPAK	X		
CHQPAK	X		
Computerized Criminal History (CCH)	X		
DMV & AOC Interfaces from Law Enforcement Message System (LEMS)	X		
FBI Hot File	X		
FBI III Sync with NC CCH	X		

Applications that have undergone source code scans or functional testing			
Department/Application	**Y2K Readiness Opinion**		
	Y2K Ready	**Y2K Ready with Minor Modifications**	**Not Y2K Ready**
FBI Monthly Converted III Records for Ident	X		
FBI Inquiries for CCH	X		
NLET Inquiries for CCH	X		
QCHL	X		
SBI Laboratory	X		
Department of Labor			
Boiler Inspections System	X		
Elevator Inspections System	X		
OSHA Inspections System	X		
Department of Public Instruction			
ABC Tools	X		
Budget Utilization and Development Application (BUD)		X	
Budgetary Allotment Application (BALT)	X		
Child Nutrition			X
Salary Administration Application	X		
Department of Revenue			
Electronic Funds Transfer (EFT)	X		
Revenue Collections and Analysis System (RCA)	X		
Tartan Data Entry System	X		

Applications that have undergone source code scans or functional testing			
Department/Application	**Y2K Readiness Opinion**		
	Y2K Ready	**Y2K Ready with Minor Modifications**	**Not Y2K Ready**
Department of the State Treasurer			
Active Members Contribution System		X	
Bank and Budgetary System	X		
Refund Payroll	X		
Refund Transition	X		
Retirement Payroll	X		
Retirement Transition	X		
Department of Transportation			
HiCAMS	X		
Payroll System	X		
Permits System	X		
SIPS Interface System		X	
State Automated Drivers License Application		X	
State Titling and Registration System (STARS)		X	
East Carolina University			
Student Information System		X	
Employment Security Commission			
Unemployment Insurance Benefits System	X		
Unemployment Insurance Tax System	X		
Housing Finance Agency			

Applications that have undergone source code scans or functional testing			
Department/Application	**Y2K Readiness Opinion**		
	Y2K Ready	**Y2K Ready with Minor Modifications**	**Not Y2K Ready**
Mortgage Credit Certificate		X	
Mortgage Revenue Bond	X		
North Carolina A&T University			
Diebold/One Card System	X		
North Carolina Community College System Office			
Continuing Education System	X		
Curriculum Student Records System	X		
Financial System	X		
North Carolina State University			
Capital Improvement: Project Tracking and Accounting Application	X		
Facilities Management Enterprise Application	X		
Financial Accounting System	X		
Student Admissions Application	X		
Student Financial Aid Application	X		
Student Scheduling and Registration Application	X		
Office of the State Controller			
Cash Management Control System		X	
Central Payroll System	X		
NCAS	X		
Secretary of State			

Applications that have undergone source code scans or functional testing			
Department/Application	**Y2K Readiness Opinion**		
	Y2K Ready	**Y2K Ready with Minor Modifications**	**Not Y2K Ready**
Corporate Information Management System	X		
Securities Information System	X		
Uniform Commercial Code Information System and Federal Tax Liens System		X	
UNC – Asheville			
SCT Plus 2000			X
UNC – Chapel Hill			
Financial Reporting System	X		
Payroll Application		X	
Physicians & Associates	X		
Student Information System Student Admissions Billing Receivables Course Inventory Student Financial Aid Records and Registration	 X X X X X		
Student Housing	X		
UNC - Pembroke			
Cashiering System	X		
Totals	74	19	9

The following are applications for which a due diligence assessment was conducted.

Applications that have undergone due diligence assessments			
Department/Application	**Y2K Readiness Opinion**		
	Due Diligence Fully Demonstrated	**Due Diligence Moderately Demonstrated**	**Due Diligence Not Demonstrated**
Department of Health and Human Services			
HEARTS – Healthcare Enterprise Accounts Receivable System		X	
MC/PLUS Pharmacy System		X	
MMIS	X		
Department of Transportation			
Emissions System	X		
North Carolina State University			
Student Loans Application	X		
University Dining Charge Card System	X		
UNC Hospitals			
GEAC HR: M	X		
Lawson Insight Application	X		
SMS Invision Application	X		
UNC - Wilmington			
AT&T Campuswide Debit Card Application	X		
Totals	8	2	0