



# STATE OF NORTH CAROLINA

## AUDIT OF THE ELIGIBILITY INFORMATION SYSTEMS APPLICATION CONTROLS

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
DIVISION OF SOCIAL SERVICES

MARCH 2008

OFFICE OF THE STATE AUDITOR  
LESLIE W. MERRITT, JR., CPA, CFP  
STATE AUDITOR

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**AUDITOR'S TRANSMITTAL**

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The Honorable Michael F. Easley, Governor  
Members of the North Carolina General Assembly  
Mr. Dempsey Benton, Secretary,  
North Carolina Department of Health and Human Services

Ladies and Gentlemen:

We have completed our information systems (IS) application audit at the Department of Health and Human Services, Division of Social Services. The audit was conducted in accordance with *Government Auditing Standards* and *Information Systems Audit Standards*.

The primary objective of this audit was to evaluate controls for the Eligibility Information System (EIS) application. The scope of our audit was to review the application controls for the EIS application. Application controls for the EIS application systems include data completeness, data accuracy, data validity, and the authorization to data. The purpose of application controls is to ensure that as data passes through the EIS application, it is complete, accurate, valid, timely, and it is protected from unauthorized access.

This report contains an executive summary that highlights the areas where the Department of Health and Human Services, Division of Social Services has performed satisfactorily relevant to our audit scope and where improvements should be made.

We wish to express our appreciation to the staff at the Department of Health and Human Services, Division of Social Services for the courtesy, cooperation, and assistance provided to us during this audit.

North Carolina General Statutes require the State Auditor to make audit reports available to the public. Copies of audit reports issued by the Office of the State Auditor may be obtained through one of the options listed in the back of this report.

Respectfully submitted,

A handwritten signature in cursive script that reads "Leslie W. Merritt, Jr.".

Leslie Merritt, Jr., CPA, CFP  
State Auditor

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## EXECUTIVE SUMMARY

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We conducted an information system (IS) audit at the Department of Health and Human Services (DHHS), Division of Social Services (DSS), from November 8, 2007, through January 18, 2008. The primary objective of this audit was to evaluate controls for the Eligibility Information System (EIS) application. The critical application controls that we tested in this application review are: (a) data completeness, (b) data accuracy, (c) data validity and (d) authorization to data. Our conclusions for the application review of the EIS application are organized into these four categories. Based on our objective, we report the following conclusions.

**Data completeness** controls are designed to ensure that all transactions are entered into the system once and only once, that all errors are corrected without any being lost, duplicated or added, that all transactions are processed, that databases are updated completely, and that all output reports are complete. *We did not identify any significant weaknesses in the completeness controls for the EIS application.*

**Data accuracy** controls ensure that the details of transactions are entered and processed correctly, and that printed output is not distributed to the user until it is checked for reasonableness. Our audit identified several significant weaknesses in accuracy controls for the EIS application. *Audit Finding 1, Budget Calculation Performed Outside the EIS Application, Audit Finding 2, Lack of Review of Error and Attention Report, Audit Finding 3, Lack of Program Run Books, Programmer's Manual, and Restart Procedures, and Audit Finding 4, Lack of Program Change Controls*

**Data Validity** ensures the data entered into the application is valid. Data is compared with the type of data that should be properly included in each input field. In addition, a division of roles and responsibilities should exist, which should exclude the possibility for a single individual subverting a critical process. Our audit identified a significant weakness in the validity of data for the EIS application. *Finding 5, Lack of Segregation of Duties in the Recording and Approval of Applications through the EIS System*

**Data Authorization** controls are designed to ensure that access to data is appropriate and authorized and that access is granted on a need to know, need to use basis. The access control environment should consist of access control software and information security policies and procedures that are implemented appropriately to protect the application data. Our audit identified several significant weaknesses in authorization controls for the EIS application. *Audit Finding 6, Information Leakage on Internet Webpage, Audit Finding 7, Inadequate Review of UAudit and Excessive Activity Reports, and Audit Finding 8, Lack of Source Code Comparison*

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## **AUDIT OBJECTIVES, SCOPE, AND METHODOLOGY**

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### **OBJECTIVES**

Under the North Carolina General Statutes Chapter 147-64.6, the State Auditor is responsible for examining and evaluating the adequacy of operating and administrative procedures and practices, systems of accounting, and other elements of State agencies. This IS audit was designed to ascertain the effectiveness of application controls at the Department of Health and Human Services, Division of Social Services.

### **SCOPE**

Application controls govern whether the design of the critical application control supports management's financial statement assertions and that the controls are functioning effectively. The scope of our IS application controls audit was to review application controls which directly affect the Division of Social Services' EIS application. Other IS access control topics were reviewed as considered necessary.

### **METHODOLOGY**

We audited policies and procedures, interviewed key administrators and other personnel, examined system configurations, tested on-line system controls, reviewed appropriate technical literature, and reviewed computer generated reports in our audit of application controls. We conducted our audit in accordance with the standards applicable to performance audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States and *Information Systems Audit Standards* issued by the Information Systems Audit and Control Association.

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## **BACKGROUND INFORMATION**

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North Carolina has a federally mandated, state-supervised, and county administered, social services system. This means the federal government authorizes national programs and a majority of the funding and the state government provides oversight and support, but it is the 100 local county departments of social services that deliver the services and benefits.

### **Department of Health and Human Services**

In North Carolina, the single administrative agency providing oversight and support is the North Carolina Department of Health and Human Services (DHHS). This umbrella agency has evolved over time and now includes separate divisions. One of the DHHS divisions is the Division of Social Services.

### **Division of Social Services / Division of Medical Assistance**

The Division of Social Services (DSS) and the Division of Medical Assistance (DMA) provide application programming and support, security, training, technical assistance, and consultation to the local staff who work in programs for families and children including Medicaid, Child Welfare, Family Support, Work First, Child Support, and Food and Nutrition Services (Food Stamps).

### **The Eligibility Information System**

The Eligibility Information System (EIS) is one of the largest applications in the state. It is used by county DSS workers to enter an application, dispose of that application, and to perform mandated reviews on the recipient's eligibility for a number of Social Welfare programs such as Medicaid, Health Choice, Temporary Assistance For Needy Families (TANF) and Special Assistance. EIS is also used by state employees to verify and audit certain criteria. EIS produces over 880,000 Medicaid cards per month and over 60,000 TANF checks. The system also provides eligibility information to the state's Medicaid fiscal agent (MMIS), and a number of other internal and external systems.

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## AUDIT RESULTS AND AUDITEE RESPONSES

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The following audit results reflect the areas where The Department of Health and Human Services, Division of Social Services, has performed satisfactorily and where recommendations have been made for improvement.

### APPLICATION CONTROLS

Application reviews consist of determining whether the design of the critical application control supports management's financial statement assertions and that the controls are functioning effectively. These reviews are performed when the auditor intends to rely on an application system control to reduce the amount of substantive testing of details required before rendering an opinion on the financial statements.

### DATA COMPLETENESS

Data completeness controls are designed to ensure that all transactions are entered into the system once and only once, that all errors are corrected without any being lost, duplicated or added, that all transactions are processed, that databases are updated completely, and that all output reports are complete. *We did not identify any significant weaknesses in the completeness controls for the EIS application.*

### DATA ACCURACY

Data accuracy controls ensure that the details of transactions are entered and processed correctly, and that printed output is not distributed to the user until it is checked for reasonableness. Our audit identified several significant weaknesses in accuracy controls for the EIS application.

#### ***AUDIT FINDING 1: BUDGET CALCULATION PERFORMED OUTSIDE THE EIS APPLICATION***

The Eligibility Information System (EIS) does not calculate the applicant's budget amount for the Medicaid program. Currently, caseworkers are either manually calculating this amount by hand or using excel spreadsheets to derive budget amounts. The budget amount is derived from multiple complex calculations and formulas. Because of the complexity of this calculation, manual calculations of the budget amount increases the risk of errors in calculation. This type of error could result in an incorrect budget amount for the applicant.

The Office of the State Auditor's financial auditors have identified this area as high risk for their financial audits. During their financial audit test work, they found significant errors in the budget calculation process.

## **AUDIT RESULTS AND AUDITEE RESPONSES (CONTINUED)**

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Agency procedures should ensure that data processing validation, authentication and editing are performed as close to the point of origination as possible and that individuals approve vital decisions that are based on criteria built into the application system.

**Recommendations:** DHHS should have the Eligibility Information System perform the budget calculations to implement more control over the accuracy of budget calculations. Also, implementing this recommendation would ensure the consistency of calculations among all caseworkers in all 100 North Carolina counties.

*Auditee's Response:* The Department of Health and Human Services concurs with this finding. However, it would not be cost effective to modify the EIS to include this calculation at this time. This weakness will be resolved with the implementation of the DHHS North Carolina Families Accessing Services through Technology (NCFAST) automation initiative.

### ***AUDIT FINDING 2: LACK OF REVIEW OF ERROR AND ATTENTION REPORT***

The agency does not assign a specific person to review the error and attention reports generated. Failure to assign someone to follow up on items identified in the daily error and attention report can result in errors that continue to perpetuate, while also negatively affecting internal controls by failing to rectify problems as they arise.

The DHHS Security Policies and Procedures Manual states “In addition to application or system-level audits, information system activity reviews shall be conducted or facilitated by the DHHS Privacy and Security Office on a periodic basis.”

**Recommendations:** Management should assign an individual from the DHHS Privacy and Security Office to review the daily error and attention report to follow up on any errors or issues identified within the report.

*Auditee's Response:* The Department of Health and Human Services concurs with the finding. The Department of Health and Human Services Privacy and Security Office has facilitated these reviews through the Division of Medical Assistance and the Division of Social Services, who employ state employees as program representatives to monitor county error and attention reports, and to notify county management when eligibility case keying errors are not corrected in a timely manner.

## **AUDIT RESULTS AND AUDITEE RESPONSES (CONTINUED)**

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### ***AUDIT FINDING 3: LACK OF PROGRAM RUN BOOKS, PROGRAMMER'S MANUAL, AND RESTART PROCEDURES***

The agency was not able to provide program run books, a programmer manual, or restart procedures for the EIS application. Without the aforementioned, critical knowledge of how to run the EIS application is not thoroughly documented for new programmers. If experienced programmers leave the agency, transfer of knowledge of the application will be limited, and unnecessary errors may be made and not corrected within a timely manner.

ITS policy states that whether the system is developed or updated by in-house staff or by a third-party vendor, agencies shall ensure that each new or updated system includes adequate system documentation. Agencies shall create, manage, and secure system documentation libraries or data stores that are available at all times but shall restrict access to authorized personnel only. Agencies shall ensure that system documentation is readily available to support the staff responsible for operating, securing and maintaining new and updated systems.

**Recommendations:** Management should create and maintain program run books, programmer's manual and restarts procedures for the EIS application. This documentation should be restricted to the appropriate personnel.

*Auditee's Response:* The Department of Health and Human Services concurs with the finding. The EIS application team will develop and maintain program run books, programmers manual and restart procedures. The documents will be restricted to the appropriate personnel, and will be made available no later than June 30, 2008.

### ***AUDIT FINDING 4: LACK OF PROGRAM CHANGE CONTROLS***

The agency does not enforce segregation of duties for program changes. In several instances, the person making a change to a program was also the person who approved the change. Consequently, programmers are able to implement changes to the production environment through Endeavor without any secondary approval. Additionally, the agency does not maintain an adequate audit trail of the program change request by the user, approval of the change to be made, program change made by the programmer, and approval of the program change prior to putting into production by another programmer. The information is either hard to obtain or is retained within the system for a few days. As a result, unauthorized changes in the EIS application could go undetected, and could have a material impact on the associated social programs (Work First and Medicaid).

All changes, including emergency maintenance and patches, relating to infrastructure and applications within the production environment should be formally managed in a controlled manner. Changes (including those to procedures, processes, and system and service parameters) should be logged, assessed and authorized prior to implementation and reviewed against planning outcomes following implementation.

In addition, DHHS policy states that an audit trail shall include sufficient information to establish what events occurred and who (or what) caused them. The policy also states that

## AUDIT RESULTS AND AUDITEE RESPONSES (CONTINUED)

audit logs shall be retained for a period specified by the system owner (typically one year) unless otherwise specified by federal or state regulations.

**Recommendations:** Management should review its policies and procedures for program changes made to the application software. Management should maintain a system whereby it is possible to determine who made and who approved changes to the application software.

*Auditee's Response:* The Department of Health and Human Services concurs with the finding. DIRM staff (Endeavor team) will implement the changes to Endeavor to incorporate the appropriate controls with a quorum of two no later than April 30, 2008. This control will prohibit any EIS staff from approving a package they have created. Audit trail request by the user, approval of the change, and implementation is tracked by the QA Track Record application used by both IT and client entities.

### DATA VALIDITY

Data Validity ensures the data entered into the application is valid. Data is compared with the type of data that should be properly included in each input field, for example, only letters should be in a name field. In addition, a division of roles and responsibilities should exist, which should exclude the possibility for a single individual subverting a critical process. Our audit identified a significant weakness in the data validity for the EIS application.

#### **AUDIT FINDING 5: LACK OF SEGREGATION OF DUTIES IN THE RECORDING AND APPROVAL OF APPLICATIONS THROUGH THE EIS SYSTEM**

Weaknesses were noted relating to the segregation of duties performed by county caseworkers. There are no program controls in the EIS system to prevent the same individual from recording and approving the same social program eligibility application. Therefore, a caseworker could incorrectly add applicants to the program with little or no detection.

Senior management should implement a division of roles and responsibilities which should exclude the possibility for a single individual to subvert a critical process. Management should also make sure that personnel are performing only those duties stipulated for their respective jobs and positions.

**Recommendations:** The DHHS Department of Information Resource Management should implement a program change to EIS that will force county caseworkers to separate the functions of recording and approving eligibility applications.

*Auditee's Response:* The Department of Health and Human Services concurs with the finding in principle. However, to impose this mandate on the 100 county departments of social services at this time could have negative consequences for our program applicants, state and federal program error rates, and county and state administrative costs. While we are aware that state staff need to closely monitor the county staff regarding errors in application processing, we feel that we have existing safeguards in place that are outlined below.

## **AUDIT RESULTS AND AUDITEE RESPONSES (CONTINUED)**

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### **Existing Safeguards That Would Detect Fraud:**

State monitors pull approximately 450 to 800 county records per month and check for errors and improper actions in application processing.

On an annual basis, Quality Control (QC) consultants pull approximately 700 county records for Medicaid QC, 1416 county records for PERM (includes Medicaid and NCHC), and 2000 county records for CARR (Case Action Record Review).

State program representatives visit counties on a monthly basis and pull case records for many different purposes throughout the year. The results of these reviews are shared with both county and state managers for corrective action purposes.

Each county has some type of second party review process where records are pulled internally and checked by a supervisor or lead worker. The number of records checked varies by county. There are reports (i.e., Caseworker Supervisor Activity Report, the weekly and monthly Report Cards, and the Application Included Report) that are generated for use by county managers that indicate the case actions completed each month. The caseworker that keyed the action is associated on the report with the applicable case action.

Medicaid Program Representatives have also recommended that county management pull application logs on a regular basis to check for discrepancies by comparing the logs to the EIS reports of applications taken.

### **Future Actions That Will Detect Fraud:**

The State is currently seeking a new case management automation solution that will replace EIS. This Information Technology initiative is called North Carolina Families Accessing Services through Technology (NC FAST). The NC FAST automation solution will have a role base security that will enable the separation of duties based on role(s) within the system. NC FAST also has a requirement that states the vendor must provide a method to automatically append a case unit action for second party review based on policy and worker profile.

State management will continue to emphasize to county directors the importance of second party review procedures especially in areas where the same caseworker registers and disposes of the application.

**DATA AUTHORIZATION**

Data Authorization controls are designed to ensure that access to data is appropriate and authorized and that access is granted on a need to know, need to use basis. The access control environment should consist of access control software and information security policies and procedures that are implemented appropriately to protect the application data. Our audit identified several significant weaknesses in authorization controls for the EIS application.

***AUDIT FINDING 6: INFORMATION LEAKAGE ON INTERNET WEBPAGE***

DHHS provides too much information on an internet webpage. We were able to obtain the following information from the DHHS external website:

- Critical production datasets for the various applications to include the EIS application
- RACF ID's and corresponding names of key programmers for the EIS application
- Instructions for navigating the Endeavor program within the mainframe
- EBT (Electronic Banking Interface System) Application Code Information
- List of the key files and DB2 tables for the EIS application
- Back up procedures for EIS and the following key information:
  - DB2 Tables
  - Batch Files
  - Transmission Files Backups
  - XPTR Report Backups
- Information on off-site storage for the EIS information

In an online information technology environment, management should implement procedures in line with the security policy that provides access security control based on the individual's demonstrated need to view, add, change or delete data.

**Recommendations:** DHHS should remove the sensitive information from the internet webpage and/or move it to the intranet as appropriate.

*Auditee's Response:* The Department of Health and Human Services concurs with the finding. The Department removed the sensitive information from public access on January 17, 2008.

***AUDIT FINDING 7: INADEQUATE REVIEW OF UAUDIT AND EXCESSIVE ACTIVITY REPORTS***

The agency does not require the DHHS Privacy and Security Office to review the UAudit report or the excessive activity report. The UAudit report can be used to identify any changes to the production environment as well as the person who made the change. The excessive activity report identifies users whose activities, including attempts to access unauthorized areas, warrant further review. Failure to regularly review the UAudit report or the excessive activity report may provide an individual with the opportunity to circumvent internal control procedures and allow an individual to commit illegal acts.



## **AUDIT RESULTS AND AUDITEE RESPONSES (CONCLUDED)**

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The DHHS Security Policies and Procedures Security Manual states that “In addition to application or system-level audits, information system activity reviews shall be conducted or facilitated by the DHHS Privacy and Security Office on a periodic basis.”

**Recommendations:** Management should require the DHHS Privacy and Security Office to receive and review the UAudit report for any unauthorized or unwarranted changes to the program code in the production environment. The Privacy and Security Office should review the excessive activity report and follow-up on any items listed on this report.

*Auditee's Response:* The Department of Health and Human Services concurs with the finding. The DHHS Privacy and Security Office will review UAudit and excessive activity reports for EIS activity.

### ***AUDIT FINDING 8: LACK OF SOURCE CODE COMPARISON***

DHHS programmers do not routinely compare the current program code to the original code to ensure no unauthorized changes have been made. Also, there were instances where the programmer approving the change to a program was also the person making the change to the program. Therefore, failure to routinely compare the current program code to the original code can result in unauthorized changes not being detected, which can lead to critical errors or the commission of illegal acts.

The agency should monitor changes to the information system conducting security impact analyses to determine the effects of the changes. Prior to change implementation, and as part of the change approval process, the agency should analyze changes to the information system for potential security impacts.

**Recommendations:** Management should require the routine comparison of the program code to the original code to ensure no unauthorized changes have been made. Management should also implement adequate segregation of duties so that the person approving a program change is not the person making the change.

*Auditee's Response:* The Department of Health and Human Services concurs with the finding. By June 30, 2008, the Division of Information Resource Management (DIRM) will implement a client review and a peer review process, to include unit, system, and regression testing of all changes to EIS programs to insure that no unauthorized changes are being made that could lead to any critical error or commission of any illegal acts.

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