



STATE OF NORTH CAROLINA

AUDIT OF THE INFORMATION SYSTEMS

GENERAL CONTROLS

CENTRAL CAROLINA COMMUNITY COLLEGE

SEPTEMBER 2007

OFFICE OF THE STATE AUDITOR

LESLIE MERRITT, JR., CPA, CFP

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Leslie Merritt, Jr.,
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State Auditor

STATE OF NORTH CAROLINA
Office of the State Auditor

2 S. Salisbury Street
20601 Mail Service Center
Raleigh, NC 27699-0601
Telephone: (919) 807-7500
Fax: (919) 807-7647
Internet <http://www.osa.state.nc.us>

AUDITOR'S TRANSMITTAL

The Honorable Michael F. Easley, Governor
Members of the North Carolina General Assembly
The Board of Directors of Central Carolina Community College
Dr. Matthew S. Garrett, President

Ladies and Gentlemen:

We have completed our audit of Central Carolina Community College. This audit was conducted during the period from May 8, 2007, through June 8, 2007. The audit was conducted in accordance with *Government Auditing Standards* and *Information Systems Audit Standards*.

The primary objective of this audit was to evaluate information systems (IS) general controls at Central Carolina Community College. The scope of our IS general controls audit included general security, access controls, systems software, physical security, and disaster recovery. Other IS general control topics were reviewed as considered necessary.

This report contains an executive summary and audit results which detail the areas where Central Carolina Community College has performed satisfactorily relevant to our audit scope, where improvements should be made, and where further study is necessary.

We wish to express our appreciation to the staff of Central Carolina Community College 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

We conducted an Information Systems (IS) audit at the Central Carolina Community College from May 8, 2007, through June 8, 2007. The primary objective of this audit was to evaluate the IS general controls in place during that period. Based on our objective, we report the following conclusions:

General security involves the establishment of a reasonable security program that addresses the general security of information resources. Central Carolina Community College has established a reasonable security program that addresses the general security of information resources. We did identify a significant weakness in general security during our audit. *See Audit Finding 1, IT Security Policies and Procedures.*

The **access control** environment consists of access control software and information security policies and procedures. We found several weaknesses in access controls. Due to the sensitive nature of the conditions found in these weaknesses, we have conveyed these findings to management in a separate letter pursuant to the provision of North Carolina G.S. 147-64.6(c)(18).

Systems software is the collection of programs that drive the computer. The selection of systems software should be properly approved and the software should be maintained by the computer center. We did not identify any significant weaknesses in systems software during our audit.

Physical security primarily involves the inspection of the agency's computer center for the controls that should reasonably secure the operations of the computer center from foreseeable and preventable threats from fire, water, electrical problems, and vandalism. We did not identify any significant weaknesses in the physical security.

A complete **disaster recovery** plan that is tested periodically is necessary to enable Central Carolina Community College to recover from an extended business interruption due to the destruction of the computer center or other Central Carolina Community College assets. Our audit did note a weakness in disaster recovery. *See Audit Finding 2, Resumption of Computer Systems.*

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AUDIT OBJECTIVES, SCOPE, AND METHODOLOGY

OBJECTIVES

Under the *North Carolina General Statutes* 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. IS general control audits are examinations of controls which effect the overall organization and operation of the IS function. This IS audit was designed to ascertain the effectiveness of general controls at Central Carolina Community College.

SCOPE

General controls govern the operation and management of computer processing activities. The scope of our IS general controls audit was to review general security issues, access controls, systems software, physical security, and disaster recovery which directly affect Central Carolina Community College's computing operations. Other IS general control topics were reviewed as considered necessary.

METHODOLOGY

We audited policies and procedures, interviewed key administrators and other personnel, examined system configurations, toured the computer facility, tested on-line system controls, reviewed appropriate technical literature, reviewed computer generated reports, and used security evaluation software in our audit of general 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

Central Carolina Community College, located in Sanford, North Carolina, was founded on September 17, 1962. The College is accredited by the Southern Association of Colleges and Schools and received its accreditation to award degrees, certificates, and diplomas. Central Carolina Community College is dedicated to the educational and cultural enrichment of the people of Sanford and surrounding counties. The College operates as a constituent institution to the North Carolina Community College System and is committed to opening the door to opportunity for citizens seeking to improve their lives and well-being. The College offers classes and programs in three primary areas: Technical, Vocational and Continuing Education courses.

Central Carolina Community College Information Technology (IT) department is headed by a Director, who reports directly to the Vice President of Administrative Services. The mission of this department is to meet the administrative computing needs of the College. The function of this department is carried out through the support for the network, hardware, and software needs of the College.

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AUDIT RESULTS AND AUDITEE RESPONSES

The following audit results reflect the areas where Central Carolina Community College has performed satisfactorily and where recommendations have been made for improvement.

GENERAL SECURITY ISSUES

General security issues involve the maintenance of a sound security management structure. A sound security management structure should include a method of classifying and establishing ownership of resources, proper segregation of duties, a security organization and resources, policies regarding access to the computer systems and a security education program.

AUDIT FINDING 1: IT SECURITY POLICIES AND PROCEDURES

Central Carolina Community College has not adopted formal information technology (IT) standards to help them address all critical areas of their IT security environment. The following critical policies and procedures were not addressed in their security program:

- Central Carolina Community College does not monitor its current system configuration against an approved baseline for system security that will assist the College in identifying unauthorized changes to the system. Without a baseline configuration for securing the critical operating system, the operating system may not be secure from commonly known vulnerabilities.

Central Carolina Community College should assume full responsibility for developing a framework policy, which establishes the organization's overall approach to security and internal control. The policy should comply with overall business objectives and be aimed at decreasing risks through preventive measures, timely identification of irregularities, limitation of losses and timely restoration.

Recommendation: Central Carolina Community College should develop an approved baseline for system security. North Carolina Community College System (NCCCS) is in the process of developing a baseline configuration that is scheduled for completion in July 2007. Central Carolina Community College should use the completed NCCCS baseline as a guideline for minimum security configurations, and document any differences between the college's baseline and the NCCCS baseline. Central Carolina Community College should develop procedures to monitor their system configuration against the college's developed baseline settings to detect any unauthorized changes to the system.

Auditee's Response: Once the baseline configuration has been completed and sent to all of the colleges, Central Carolina Community College will use it to create a baseline configuration that will meet our needs.

AUDIT RESULTS AND AUDITEE RESPONSES (CONTINUED)

ACCESS CONTROLS

The most important information security safeguard that Central Carolina Community College has is its access controls. The access controls environment consists of Central Carolina Community College's access control software and information security policies and procedures. An individual or a group with responsibility for security administration should develop information security policies, perform account administration functions and establish procedures to monitor and report any security violations. We noted a number of weaknesses in access controls. Due to the sensitive nature of the conditions found in the weaknesses, we have conveyed these findings to management in a separate letter pursuant to the provision of North Carolina G.S. 147-64.6(c)(18).

SYSTEMS SOFTWARE

Systems software is the collection of programs that the computer center uses to run the computer and support the application systems. This software includes the operating system, utility programs, compilers, database management systems and other programs. The systems programmers have responsibility for the installation and testing of upgrades to the system software when received. Systems software changes should be properly documented and approved. Our audit did not identify any significant weaknesses in system software.

PHYSICAL SECURITY

Controls over physical security are designed to protect a computer center from service interruptions resulting from fire, water, electrical problems, vandalism, and other causes. Our audit did not identify any significant weaknesses in physical security.

DISASTER RECOVERY

Disasters such as fire and flood can destroy a computer service center and leave its users without computer processing support. Without computer processing, many college services would grind to a halt. To reduce this risk, computer service centers develop disaster recovery plans. Disaster recovery procedures should be tested periodically to ensure the recoverability of the data center. Our audit did identify a significant weakness in disaster recovery planning.

AUDIT RESULTS AND AUDITEE RESPONSES (CONCLUDED)

AUDIT FINDING 2: RESUMPTION OF COMPUTER SYSTEMS

Central Carolina Community College does have a complete disaster recovery plan to ensure the resumption of computer systems during adverse circumstances. However, the plan is missing executive management's signature of approval on the plan. The lack of management approval may not ensure that the disaster recovery plan is developed and maintained in accordance with the college's overall framework for restoring critical information services in the event of a major failure. The disaster recovery plan should minimize the effect of disruptions. Procedures should require that the plan be reviewed and revised annually or when significant changes to the College's operations occur.

Recommendation: Central Carolina Community College should submit the current plan to executive management for approval.

Auditee's Response: The Business Continuity and Disaster Recovery Plan is still in draft form. It is for the IT Department only. The College campus wide Risk Assessment will begin the fiscal year of 2007-2008 at which point the entire Business Continuity and Disaster Recovery Plan will be presented to management for approval.

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ORDERING INFORMATION

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Office of the State Auditor
State of North Carolina
2 South Salisbury Street
20601 Mail Service Center
Raleigh, North Carolina 27699-0601

Telephone: 919/807-7500

Facsimile: 919/807-7647