STATE OF NORTH CAROLINA

AUDIT OF THE INFORMATION SYSTEMS

GENERAL CONTROLS

HAYWOOD COMMUNITY COLLEGE

NOVEMBER 2007

OFFICE OF THE STATE AUDITOR

LESLIE MERRITT, JR., CPA, CFP

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AUDITOR'S TRANSMITTAL

The Honorable Michael F. Easley, Governor
Members of the North Carolina General Assembly
The Board of Directors of Haywood Community College
Dr. Rose Johnson, President

Ladies and Gentlemen:

We have completed our audit of Haywood Community College. This audit was conducted during the period from August 29, 2007, through September 18, 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 Haywood 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 Haywood 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 Haywood 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,

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 Haywood Community College from August 29, 2007, through September 19, 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. Haywood 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 Polices 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 Haywood Community College to recover from an extended business interruption due to the destruction of the computer center or other Haywood Community College assets. Our audit did note a weakness in disaster recovery. *We did not identify any significant weaknesses in disaster recovery.*

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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 Haywood 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 Haywood 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

Haywood Community College is an “open door” community college serving the residents of eligible age in Haywood County and surrounding areas. Haywood Community College was established in 1965 and is located at 185 Freedlander Drive, Clyde, North Carolina. The Southern Association of Colleges and Schools accredits Haywood Community College to award associate degrees, diplomas, and certificates. The College offers education and training in the following areas: Business and Entrepreneurship, Natural Resources, Applied Technology, Engineering, Information Systems, and Liberal Arts. The mission of Haywood Community College is to offer accessible educational, social, and cultural opportunities to residents of Haywood County and the surrounding area. Through its open-door policy, the College strives to meet the needs of students with varying backgrounds, resources, interests, abilities, and career goals.

The Information Technology (IT) division at Haywood Community College is headed by the Director of Technology. The Director of Technology reports to the President of the College. The mission of the IT division is to provide Haywood Community College customers with the highest quality information services possible in a cost-effective, timely and customer-oriented fashion. The function of the IT division is to provide administrative and academic computing services to faculty, staff, and students at Haywood Community College.

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The following audit results reflect the areas where Haywood 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

Haywood 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:

- Haywood 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.

Haywood 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: Haywood 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. Haywood 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. Haywood 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**:*** Haywood Community College has adopted the NCCCS baseline as a minimum standard security configuration. We are currently working to bring the critical operating system in to compliance with this baseline. We are developing procedures to monitor the system configuration against this adopted baseline. We have made no changes to this recommended baseline at this time. In the event that we were to make changes, these changes will be documented. We will complete this process in a timely fashion. Upon completion we will be in compliance with the Auditors recommendation.

ACCESS CONTROLS

The most important information security safeguard that Haywood Community College has is its access controls. The access controls environment consists of Haywood 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. Haywood Community College's physical security controls ensure that the computer service center is reasonably secure from foreseeable and preventable threats to its physical continuity. *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 not identify any significant weaknesses in disaster recovery.*

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