



# STATE OF NORTH CAROLINA

**AUDIT OF THE INFORMATION SYSTEMS**

**GENERAL CONTROLS**

**WILKES COMMUNITY COLLEGE**

**DECEMBER 2007**

**OFFICE OF THE STATE AUDITOR**

**LESLIE MERRITT, JR., CPA, CFP**

**STATE AUDITOR**

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CPA, CFP  
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**AUDITOR'S TRANSMITTAL**

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The Honorable Michael F. Easley, Governor  
Members of the North Carolina General Assembly  
The Board of Directors of Wilkes Community College  
Dr. Gordon G. Burns, Jr. President

Ladies and Gentlemen:

We have completed our audit of Wilkes Community College. This audit was conducted during the period from July 18, 2007, through August 30, 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 Wilkes 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 Wilkes 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 Wilkes 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

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We conducted an Information Systems (IS) audit at the Wilkes Community College from July 18, 2007, to August 30, 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. Wilkes Community College has established a reasonable security program that addresses the general security of information resources. *We did not identify any significant weaknesses in general security during our audit.*

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 Wilkes Community College to recover from an extended business interruption due to the destruction of the computer center or other Wilkes Community College assets. Our audit did note a weakness in disaster recovery. *See Audit Finding 1, Resumption of Computer Systems.*

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## AUDIT OBJECTIVES, SCOPE, AND METHODOLOGY

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### 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 Wilkes 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 Wilkes 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**

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On October 1, 1964, Wilkes Community College was approved by the State Board of Education. The College is located in Wilkesboro, North Carolina. Wilkes Community College is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools. As a public, two-year, “open door” institution, Wilkes Community College is committed to providing comprehensive education and educational support services for people in Wilkes, Ashe, and Alleghany Counties and beyond. As a member of the North Carolina Community College System, the College seeks to enhance intellectual, economic, cultural, and social development. Wilkes Community College offers curriculum programs, Associate Degree programs, and diploma and certificate programs.

The Information Services Department of Wilkes Community College is headed by the Associate Dean of Information Services, who reports directly to the President. The mission of the Information Services Department is to manage the College network to maintain communications between the appropriate college faculty/staff and the required information processing, manage the College computer system, including servers, desktop computers, and laptop computers so that they meet the functional needs of the College, and maintain NCIH facilities for the purpose of Distance Learning. The function of the Information Services Department is to carry out the mission of the department. This function is accomplished by the IS staff of three persons who generally divide the work up to the staff person best suited to perform the job, the System Administrator, the Network Administrator and the Network/Distance Education Technician.

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## AUDIT RESULTS AND AUDITEE RESPONSES

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The following audit results reflect the areas where Wilkes 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. *We did not identify any significant weaknesses in General Security during our audit.*

### ACCESS CONTROLS

The most important information security safeguard that Wilkes Community College has is its access controls. The access controls environment consists of Wilkes 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

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

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plans. Disaster recovery procedures should be tested periodically to ensure the recoverability of the data center.

### ***AUDIT FINDING 1: RESUMPTION OF COMPUTER SYSTEMS***

Wilkes Community College does not have a complete and approved disaster recovery plan to ensure the resumption of computer systems during adverse circumstances. The plan is being developed and is in draft form. Since the disaster recovery plan is incomplete and because the plan is not final, Wilkes Community College has not tested the plan. The plan should include the following critical components:

- Executive management's signature of approval of the plan.
- Statement of the assumptions, such as the maximum time without computing, underlying the plan.
- Identification of critical applications in each user department and the priority in which these applications will be restored if resources are limited.
- Identification of key personnel and their assignments during the restoration of processing.
- Alternate user department procedures to manage their workloads until processing resumes.
- Arrangements to use an alternate computer facility during the reconstruction of the replacement center if needed. This agreement should be written.
- An inventory of equipment, special stock and arrangements to acquire replacement equipment.
- A procedure to update the plan when there are major changes to the environment or at least annually.

In the event of a disaster, the aforementioned components are necessary to ensure the proper recovery of the computer resources. In addition, a disaster recovery plan should be tested to ensure that the plan is effective. Management should ensure that a written plan is developed and maintained in accordance with the 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:* Wilkes Community College should continue to develop the plan, ensure that aforementioned critical components are included in their plan, and should test the plan at least on a yearly basis. Also, Wilkes Community College should store a copy of the completed plan in an offsite location.

## AUDIT RESULTS AND AUDITEE RESPONSES (CONCLUDED)

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*Auditee's Response:* In early 2007 Wilkes Community College purchased a new computer system to house the R18 Datatel programs and files with the goal of using the previous system as a disaster recovery system. Since the visit of the IT auditor, Wilkes Community College has completed the conversion to the new system and new software. This conversion had to be completed by the end of November 2007 due to the end of software support for the R17 Datatel software. Wilkes Community College is now working to create a disaster recovery system on this old computer equipment. This system is located in another College building away from the main College server room.

The disaster recovery plan will be finalized when the backup computer system is configured and operational. Although work is underway to implement the disaster recovery system into the operational environment, it will be in early 2008 before all this work can be completed. After the disaster recovery system is operational, the details necessary for the disaster recovery plan will be available to be documented. The functions of the key personnel can be documented.

When the old computer system is operational, Wilkes Community College will have the ability to perform an extensive test of the equipment and plan. Until this computer is operational, a test of any disaster recovery plan will interrupt the daily operations of the College and stop all operations of critical functions. It is anticipated that an annual test will be performed so that normal business operations are not affected.

A reciprocal written agreement with Surry Community College is already in place so that we can immediately respond with essential work functions. An inventory of essential equipment for IT operations and the appropriate operating and application software has been documented and is available now.

Wilkes Community College will use this review by the State Auditors to insure that we have the necessary equipment and contingencies in place in the event of a disaster. Previously we have not had the resources or the facilities available to assure continued business operations in the aftermath of a disaster.

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## ORDERING INFORMATION

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Audit reports issued by the Office of the State Auditor can be obtained from the web site at [www.ncauditor.net](http://www.ncauditor.net). Also, parties may register on the web site to receive automatic email notification whenever reports of interest are issued. Otherwise, copies of audit reports may be obtained by contacting the:

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