



# STATE OF NORTH CAROLINA

**AUDIT OF THE INFORMATION SYSTEMS**

**GENERAL CONTROLS**

**CATAWBA VALLEY COMMUNITY COLLEGE**

**SEPTEMBER 2007**

**OFFICE OF THE STATE AUDITOR**

**LESLIE 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  
The Board of Directors of Catawba Valley Community College  
Dr. Garrett Hinshaw, President

Ladies and Gentlemen:

We have completed our audit of Catawba Valley Community College. This audit was conducted during the period from June 26, 2007, through July 31, 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 Catawba Valley 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 Catawba Valley 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 Catawba Valley 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 Catawba Valley Community College from June 26, 2007, through July 31, 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** 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. Catawba Valley Community College has established a reasonable security program that addresses the general security of information resources. *Our audit did not identify any significant weaknesses in general security.*

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 found several weaknesses in physical security. *See Audit Finding 1: Physical Security.*

A complete **disaster recovery** plan that is tested periodically is necessary to enable Catawba Valley Community College to recover from an extended business interruption due to the destruction of the computer center or other Catawba Valley Community College assets. We found a significant weakness in disaster recovery. *See Audit Finding 2: 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 Catawba Valley 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 Catawba Valley 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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Catawba Valley Community College, located in Hickory, NC, was founded in 1964 and is accredited by the Southern Association of Colleges. Catawba Valley Community College received its initial accreditation in 1969 and was reaffirmed in 1994. The College offers a variety of degrees, certificates, and diplomas. Technical, vocational, and certificate programs of study at Catawba Valley Community College have been established to prepare individuals for employment upon completion of studies. The College Transfer program has been developed to provide opportunities for students to transfer two years of academic credit to senior colleges and universities. The mission of Catawba Valley Community College is to enrich individuals and the community by providing quality educational opportunities and workforce training.

There are two departments performing computer services at Catawba Valley Community College. The Information Services department handles the student and financial data processing functions for the College, and the Information Technology department handles all hardware and networking functions. The Coordinator of Institutional Research and System Administration heads the Information Services department and reports to the Dean of Technology. Information Technology is headed by the Information Technology Director who also reports to the Dean of Technology. The mission of these departments is to support the overall mission of the College by providing quality computer services to the staff, faculty, and students of Catawba Valley Community College.

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## AUDIT RESULTS AND AUDITEE RESPONSES

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The following audit results reflect the areas where Catawba Valley 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. Catawba Valley Community College has established a reasonable security program that addresses the general security of information resources. *Our audit did not identify any significant weaknesses in general security.*

### ACCESS CONTROLS

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

## AUDIT RESULTS AND AUDITEE RESPONSES (CONTINUED)

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### 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. The computer room is not reasonably secure from foreseeable and preventable threats to its physical continuity. We found the following physical security weaknesses:

#### ***AUDIT FINDING 1: PHYSICAL SECURITY***

- Access to the computer area is not restricted to authorized personnel. As a result, the physical security over Catawba Valley Community College back-up tapes and computing resources is weakened and could allow unauthorized tampering of the data stored on the back-up tapes and unauthorized access to computer hardware.
- The System Administrator leaves the door unlocked to the computer room. Because the critical operating system, which hosts the financial and student information, resides in this computer room, unauthorized personnel could directly access the main console and modify, delete, and corrupt data, or interrupt Catawba Valley Community College's computer processing capabilities.

Appropriate physical security and access control measures should be established for computer processing facilities in conformance with the general security policy. Access should be restricted to individuals who have been authorized to gain such access.

*Recommendation:* Catawba Valley Community College should develop procedures to ensure that the computer room is always secure from access by unauthorized personnel.

*Auditee's Response:* Catawba Valley Community College's future plans include moving the Information Services department to a new area where the computer system and backups will be more secure. Until that time, Catawba Valley Community College will re-key all doors that access the Information Services area. Only those persons with responsibilities that require access to the area will be granted a key.

The hallway leading from the Business Office into the computer is considered a dead-end hallway. Fire code requires that the doors from a dead-end hallway remain unlocked.

## AUDIT RESULTS AND AUDITEE RESPONSES (CONCLUDED)

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### 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.

#### **AUDIT FINDING 2: RESUMPTION OF COMPUTER SYSTEMS**

Catawba Valley Community College does not have an approved disaster recovery plan to ensure the resumption of computer systems during adverse circumstances. Catawba Valley Community College does have a draft disaster recovery plan, which is incomplete. The plan does not include the following critical components:

- Statement of the assumptions, such as the maximum time without computing, underlying the plan.
- The plan has not been tested.

In the event of a disaster, the aforementioned components are necessary to ensure the proper recovery of the computer resources. Also, 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:* Catawba Valley Community College should officially approve the draft disaster recovery plan, include the aforementioned critical components in to their plan and should test the plan at least on a yearly basis.

*Auditee's Response:* Catawba Valley Community College will amend the Disaster Recovery Plan to include recommended critical components. Since each area bears a responsibility, we will complete the updated plan by Fall 2007.

Catawba Valley Community College will seek approval from President for the updated Disaster Recovery Plan.

A test of recovery plans will be coordinated each year by the Information Services office and the Vice-Presidents.

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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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