



STATE OF NORTH CAROLINA

AUDIT OF THE INFORMATION SYSTEM GENERAL CONTROLS

AT

ASHEVILLE-BUNCOMBE TECHNICAL COMMUNITY COLLEGE

ASHEVILLE, NORTH CAROLINA

JUNE 2004

OFFICE OF THE STATE AUDITOR

RALPH CAMPBELL, JR.

STATE AUDITOR

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State Auditor

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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 Asheville-Buncombe Technical Community College
Mr. Kenneth Ray Bailey, President

Ladies and Gentlemen:

We have completed our information systems (IS) audit of Asheville-Buncombe Technical Community College. The audit was conducted in accordance with *Government Auditing Standards* and *Information Systems Audit Standards*.

The primary objective of this audit was to evaluate IS general controls at Asheville-Buncombe Technical Community College. The scope of our IS general controls audit included general security, access controls, program maintenance, systems software, physical security, and disaster recovery. Other IS general control topics were reviewed as considered necessary.

This report contains an executive summary that highlights the areas where Asheville-Buncombe Technical Community College has performed satisfactorily and where improvements should be made.

We wish to express our appreciation to the staff at Asheville-Buncombe Technical 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,

Ralph Campbell, Jr.
State Auditor

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EXECUTIVE SUMMARY

We conducted an information system (IS) audit at Asheville-Buncombe Technical Community College (CC) from April 4, 2003 - April 30, 2004. 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. We found that Asheville-Buncombe Technical Community College has adopted formal standards for information technology (IT) and has adequate IT Security Policies and Procedures. *We found no significant weaknesses in general security.*

The **access control** environment consists of access control software and information security policies and procedures. We reviewed the access controls for Asheville-Buncombe Technical Community College's critical operating systems. We found several weaknesses in access controls. Due to the sensitive nature of the conditions found, we have conveyed these findings to management in a separate letter pursuant to the provision of *North Carolina General Statute 147-64.6(c)(18)*.

Program maintenance primarily involves enhancements or changes needed to existing systems. Because the same procedures are used to patch and upgrade the critical application and the operating system, we indirectly tested program changes to the critical application in our test of system software maintenance.

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 found a significant weakness in systems software maintenance. Due to the sensitive nature of the condition found, we have conveyed this finding to management in a separate letter pursuant to the provision of *North Carolina General Statute 147-64.6(c)(18)*.

Physical security primarily involves the inspection of the College'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. Asheville-Buncombe Technical Community College computer center is secure from foreseeable and preventable security and environmental threats. *We found no significant weaknesses in physical security.*

A complete **disaster recovery** plan that is tested periodically is necessary to enable the College to recover from an extended business interruption due to the destruction of the computer center or other College assets. Asheville-Buncombe Technical Community College has an adequate Disaster Recovery Plan. *We found no significant weaknesses in disaster recovery.*

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AUDIT OBJECTIVES, SCOPE, AND METHODOLOGY

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 general controls at Asheville-Buncombe Technical 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, program maintenance, systems software, physical security, operations procedures, and disaster recovery which directly affect Asheville-Buncombe Technical Community College computing operations. Other IS general control topics were reviewed as considered necessary.

METHODOLOGY

We audited policies and procedures, used questionnaires to interview key administrators and other personnel, developed a program to generate information from the critical operating systems to examine 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 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.¹

¹ In 1992 the State created the Information Resource Management Commission to provide statewide coordination of information technology resources planning. The IRMC provides state enterprise IT leadership including increased emphasis and oversight for strategic information technology planning and management; policy development; technical architecture; and project certification. Pursuant to *North Carolina General Statute* 147-33.78 numerous state officials serve on the IRMC including four members of the Council of State who are appointed by the Governor. The State Auditor has been appointed a member of the IRMC and elected as chair of the IRMC by its members.

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BACKGROUND INFORMATION

Asheville-Buncombe Technical Community College, located in Asheville, NC, has been accredited since 1969 by the Southern Association of Colleges and Schools to award associate degrees, certificates, and diplomas. The College offers Associate of Arts, and Associate of Applied Science degrees. The mission of Asheville-Buncombe Technical Community College is dedicated to student success. As a comprehensive Community College, Asheville-Buncombe Technical Community College is committed to providing accessible, quality educational opportunities for lifelong learning to meet the diverse and changing needs of the community.

The IT division at Asheville-Buncombe Technical Community College is referred to as the Information Systems Technology division of the College. The Information Systems Technology division has a staff of seven, including a director, associate director, network administrator, computer center specialist, two technical support specialists and a software support specialist. The associate director and computer center specialist primarily support the administrative computing function. The network administrator assisted by the technical support specialists maintains the campus network. The Director reports to the Vice President of Administrative Services. The mission of the Information Systems Technology division is to coordinate and administer the College's information and communication systems, and to promote the effective use of technology throughout the College. The function of the Information Systems Technology division is to administer and support use of campus network with its associated applications, the administrative computer systems, workstations, and telephone system.

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AUDIT RESULTS AND AUDITEE RESPONSES

The following audit results reflect the areas where Asheville-Buncombe Technical 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 found no significant weaknesses in general security.*

ACCESS CONTROLS

The access control environment consists of 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 reviewed the access controls for Asheville-Buncombe Technical Community College's critical operating systems. We found several significant weaknesses in access controls. Due to the sensitive nature of the conditions found, we have conveyed these findings to management in a separate letter pursuant to the provision of *North Carolina General Statute 147-64.6(c)(18)*.

PROGRAM MAINTENANCE

Program maintenance consists of making changes to existing application systems. Programmers should follow program change procedures to ensure that changes are authorized, made according to specifications, properly tested, and thoroughly documented. Application programmers should be restricted to a test environment to ensure that all changes to production resources are tested and approved before moving the changes into production. Changes to application system production programs should be logged and monitored by management. Because the same procedures are used to patch and upgrade the critical application and the operating system, we indirectly tested program changes to the critical application in our test of system software maintenance.

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

AUDIT RESULTS AND AUDITEE RESPONSES (CONCLUDED)

software when received. We found a significant weakness in systems software maintenance. Due to the sensitive nature of the condition found, we have conveyed this finding to management in a separate letter pursuant to the provision of *North Carolina General Statute 147-64.6(c)(18)*.

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. Asheville-Buncombe Technical Community College computer center is secure from foreseeable and preventable security and environmental threats. *We found no 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. *We found no significant weaknesses in disaster recovery.*

DISTRIBUTION OF AUDIT REPORT

In accordance with General Statutes 147-64.5 and 147-64.6(c)(14), copies of this report have been distributed to the public officials listed below. Additional copies are provided to other legislators, state officials, the press, and the general public upon request.

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The Honorable Beverly M. Perdue
The Honorable Richard H. Moore
The Honorable Roy A. Cooper, III
Mr. David T. McCoy
Mr. Robert L. Powell
Mr. Martin Lancaster

Mr. Kenneth Ray Bailey

Governor of North Carolina
Lieutenant Governor of North Carolina
State Treasurer
Attorney General
State Budget Officer
State Controller
President
The North Carolina Community College System
President, Asheville-Buncombe Technical
Community College

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Mr. James D. Johnson

Director, Fiscal Research Division

Other Officials

Chairman and Members of the Information Resource Management Commission

ORDERING INFORMATION

Copies of this report may be obtained by contacting the:

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