



STATE OF NORTH CAROLINA

AUDIT OF THE INFORMATION SYSTEMS

GENERAL CONTROLS

PAMLICO COMMUNITY COLLEGE

DECEMBER 2007

OFFICE OF THE STATE AUDITOR

LESLIE MERRITT, JR., CPA, CFP

STATE AUDITOR

AUDIT OF THE INFORMATION SYSTEMS

GENERAL CONTROLS

PAMLICO COMMUNITY COLLEGE

DECEMBER 2007



Leslie Merritt, Jr.,
CPA, CFP
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 Pamlico Community College
Dr. F. Marion Altman, President

Ladies and Gentlemen:

We have completed our audit of Pamlico Community College. This audit was conducted during the period from July 17, 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 Pamlico 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 Pamlico 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 Pamlico 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

TABLE OF CONTENTS

	PAGE
EXECUTIVE SUMMARY.....	1
AUDIT OBJECTIVES, SCOPE, AND METHODOLOGY	3
BACKGROUND INFORMATION	5
AUDIT RESULTS AND AUDITEE RESPONSES	7
ORDERING INFORMATION	11

EXECUTIVE SUMMARY

We conducted an Information Systems (IS) audit at the Pamlico Community College from July 17, 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 involves the establishment of a reasonable security program that addresses the general security of information resources. Pamlico 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 one weakness in access controls. Due to the sensitive nature of the condition found in this weakness, we have conveyed this finding 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 find 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 Pamlico Community College to recover from an extended business interruption due to the destruction of the computer center or other Pamlico Community College assets. *Our audit did not identify any significant weaknesses in disaster recovery.*

[This Page Left Blank Intentionally]

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 Pamlico 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 Pamlico 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.

[This Page Left Blank Intentionally]

BACKGROUND INFORMATION

Pamlico Community College is a two-year fully accredited community college. It opened in 1962 as an Industrial Education Center which was located on the campus of Pamlico County High School. Pamlico Community College has since evolved into an expanding campus of its own where hundreds come to pursue degrees, diplomas, certificates and opportunities to enrich one's quality of life. Pamlico Community College offers 12 academic programs and a broad selection of Continuing Education courses ranging from GED instruction to the US Coast Guard Captain's Licensing. Since it was founded, tens of thousands of students have benefited from many programs made available at Pamlico Community College. Students can study in high speed internet labs, connect with online courses offered by instructors around the world, or study in traditional classrooms and push their dreams forward in positive fashion. A contract program with East Carolina University enables students in appropriate programs to transfer on for a four year education.

The IT division at Pamlico Community College is referred to as the Computer Services division of Pamlico Community College. The Director of Computer Services/Instructor, who is responsible for the entire computing of Pamlico Community College, heads the Computer Services division. This position reports to the Vice President of Administrative Affairs. The community college mission statement is to provide accessible and affordable quality education, workforce training, and lifelong learning opportunities. The function of the Computer Services division is to provide installation, upgrade and support services for the administrative systems of Pamlico Community College and to develop, maintain, and upgrade the College information infrastructure in support of expanding technology goals.

[This Page Left Blank Intentionally]

AUDIT RESULTS AND AUDITEE RESPONSES

The following audit results reflect the areas where Pamlico 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

Pamlico 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:

- Pamlico 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.

Pamlico 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: Pamlico Community College should develop an approved baseline for system security. North Carolina Community College System (NCCCS) developed a baseline configuration that was completed in July 2007. Pamlico 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. Pamlico 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.

AUDIT RESULTS AND AUDITEE RESPONSES (CONTINUED)

Auditee's Response: Previous audits recommended that the NCCCS System Office develop a base line configuration for all NC community colleges. The IIPS organization was tasked with that responsibility by the NCCCS System Office. This system wide base line was delivered as a draft a few days before our College's IT audit. Because Pamlico Community College was aware of the State Auditor's Office preference for a system wide baseline, we adapted that draft baseline immediately. Pamlico Community College's Computer Services Department reviewed the baseline as soon as it was received. Changes were immediately implemented to tailor it for best performance and security with the Pamlico Community College system. We immediately instituted this System Office draft baseline as Pamlico Community College's local baseline, and had it locally approved. Since this baseline had been well reviewed by many NCCCS IT personnel but has not received official approval, we felt immediate review and implementation was our best course of action for system security, and to meet audit preferences.

ACCESS CONTROLS

The most important information security safeguard that Pamlico Community College has is its access controls. The access controls environment consists of Pamlico 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 weakness in access controls. Due to the sensitive nature of the condition found in the weakness, we have conveyed this finding 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 a significant weakness 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. Pamlico 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 a significant weakness in physical security.*

AUDIT RESULTS AND AUDITEE RESPONSES (CONCLUDED)

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 a significant weakness in disaster recovery.*

[This Page Left Blank Intentionally]

ORDERING INFORMATION

Audit reports issued by the Office of the State Auditor can be obtained from the web site at 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:

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