STATE OF NORTH CAROLINA

AUDIT OF THE INFORMATION SYSTEMS

GENERAL CONTROLS

ELIZABETH CITY STATE UNIVERSITY

JULY 2006

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
Dr. Mickey L. Burnim, Chancellor

Ladies and Gentlemen:

We have completed our audit of Elizabeth City State University (ECSU). This audit was conducted during the period from January 25, 2006 through February 17, 2006. 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 ECSU. The scope of our IS general controls audit included general security, access controls, program maintenance, systems software, systems development, 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 ECSU 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 ECSU 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 Elizabeth City State University (ECSU) from January 25 2006 through February 17, 2006. 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 did not note any significant weaknesses in general security controls of information resources. We noted that ECSU has not performed and documented a risk assessment for its critical information technology systems. See Current Audit Results and Auditee Responses, Audit Finding 1, No Risk Assessment Has Been Performed for additional information.

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).

Program maintenance primarily involves enhancements or changes needed to existing systems. Our audit did not identify any significant weaknesses in program 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 did not identify any significant weaknesses in systems software during our audit.

Systems Development includes the creation of new application systems or significant changes to existing systems. We did not identify any significant weaknesses in systems development 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 ECSU to recover from an extended business interruption due to the destruction of the computer center or other ECSU assets. Our audit did not note 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 ECSU.

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, systems development, physical security, and disaster recovery which directly affect ECSU'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 application 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

Elizabeth City State University (ECSU) is a public state assisted institution located in Elizabeth City, North Carolina. Founded in 1891, ECSU was initially created as a normal school for the specific purpose of "teaching and training teachers of the colored race to teach in common schools of North Carolina." Elizabeth City State University became part of the University of North Carolina (UNC) system of higher education in 1972. It is one of the historically black college/university within the UNC system.

The Division of Information Technology is tasked with providing computing and networking services to the ECSU community – students, faculty, and staff. The unit reports to the Chief Information Officer. It is composed of three support service departments: Administrative Computing, Academic Computing & End User Support Services, and Network Services. Together, these departments provide, support, and maintain the technology infrastructure at ECSU.

- Administrative Computing is responsible for formulating and maintaining the computer-related data processing support and services for the university. These include providing technical support for the campus financial, human resources, and student records systems as well as appropriate computing for other administrative functions in academic and administrative units.
- Academic Computing & End User Support Services provides a broad range of assistance to faculty, staff, and students using instructional computing facilities. It is responsible for the day-to-day management of the academic computers and software systems. This includes monitoring, ensuring that the equipment is fully functional and responding to all academic users' need.
- Network Services is responsible for providing the connectivity and the proper functionality of equipment for all voice, video, and data communications used by ECSU. It determines standards for network hardware, software, and related equipment. It ensures that such equipment is appropriate for the ECSU computing environment.

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The following audit results reflect the areas where ECSU 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. ECSU has established a reasonable security program that addresses the general security of information resources. However, we noted one significant weakness in general security during our audit.

Audit Finding 1: NO RISK ASSESSMENT HAS BEEN PERFORMED

A risk assessment has not been performed and documented at ECSU. A risk assessment is an assessment of the risk faced by information technologies at ECSU. It is intended to supplement the University's IT disaster recovery plan and business continuity plan. This document should identify and classify potential risks to ECSU's central IT infrastructure and resources, document obstacles precluding elimination of these identified risks and recognize the University's acceptance of those risks. A risk assessment should be updated with the results of audits, inspections and identified incidents. A complete review of the risk assessment should be performed annually.

Recommendation: ECSU should perform a risk assessment. The plan should be updated on an annual basis.

Auditee's Response: Elizabeth City State University accepts the Office of the State Auditor's recommendation to perform a risk assessment.

ACCESS CONTROLS

The most important information security safeguard that ECSU has is its access controls. The access controls environment consists of ECSU'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).

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. We did not note any significant weaknesses in program 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 software when received. Systems software changes should be properly documented and approved. Our audit did not identify any significant weaknesses in system software.

SYSTEMS DEVELOPMENT

Systems development includes the creation of new application systems or significant changes to existing systems. Systems development projects can be expensive and affect the operations of the agency in significant ways. Consequently, the agency should have a strategic or master plan for systems development. Each development project should be managed using project management techniques and should adhere to a clearly defined systems development methodology. When a project is completed, the finished product should include a comprehensive set of documentation so that the users, operators and programmers each have the information they need to do their jobs.

ECSU no longer performs any significant in-house systems development. New application systems are purchased from software vendors and the purchases are guided by procedures and standards for the procurement of software products. Our audit did not identify any significant weaknesses in systems development.

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. ECSU's physical security controls ensure that the computer service center is reasonably secure from foreseeable and preventable threats to its physical continuity.

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, ECSU would grind to a halt. To reduce this risk, computer service centers develop business continuity plans. Business continuity procedures should be tested periodically to ensure the recoverability of the data center. Our audit did not identify any significant weakness in disaster recovery planning.

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