STATE OF NORTH CAROLINA

AUDIT OF THE INFORMATION SYSTEMS

GENERAL CONTROLS

FAYETTEVILLE STATE UNIVERSITY

MAY 2007

OFFICE OF THE STATE AUDITOR

LESLIE MERRITT, JR., CPA, CFP

STATE AUDITOR

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AUDITOR'S TRANSMITTAL

The Honorable Michael F. Easley, Governor
Members of the North Carolina General Assembly
Dr. T. J. Bryan, Chancellor, Fayetteville State University

Ladies and Gentlemen:

We have completed our audit of Fayetteville State University (FSU). This audit was conducted during the period from January 3, 2007, through February 23, 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 FSU. 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 FSU 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 FSU 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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We conducted an Information Systems (IS) audit at the Fayetteville State University (FSU) from January 3, 2007, through February 23, 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. FSU 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).*

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 systems software during our audit.*

A complete **disaster recovery** plan that is tested periodically is necessary to enable FSU to recover from an extended business interruption due to the destruction of the computer center or other FSU 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 FSU.

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 FSU'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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Fayetteville State University is a constituent institution of the 16-campus University of North Carolina System. The University is fully accredited by the Southern Association of Colleges and Schools. In addition, individual university departments, degree programs, and service functions hold memberships and accreditations with appropriate professional organizations. In 1877 an act of the legislature provided for the establishment of a teacher training institution for Black North Carolinians. The A Howard School in Fayetteville was selected to become the State Colored Normal School, and thus becomes the first and oldest state-supported institution of its kind in North Carolina. Chancellor T. J. Bryan is the tenth Chief Executive Officer of the 138-year-old historically black institution and the first female to head the institution.

Fayetteville State University offers Bachelor's degrees in 43 areas, Master's degrees in 22 areas, and a Doctoral degree in educational leadership. New bachelor's programs include undergraduate degrees in biotechnology, communications, forensic science, management information systems (MIS), and generic nursing. New graduate programs include the Master of Arts in teaching.

University Mission Statement

The primary mission of Fayetteville State University is to provide high-quality education to its students at the undergraduate level through a basic liberal arts foundation and major programs in the arts and sciences, teacher education, and business and economics as well as specific graduate programs. Committed to excellence in teaching, research, and service to the community, the University seeks to prepare its students and graduates to lead meaningful and productive lives. In doing so, Fayetteville State University strives to produce creative thinkers and leaders who will reach beyond current intellectual and cultural boundaries to become change agents for shaping the future of the nation and the world. As a part of its broader mission, the University extends its services as a regional institution by providing life-long learning experiences and opportunities to the University's immediate and extended communities and serving as a resource for business, education, and culture in North Carolina.

The Information Technology and Telecommunications Services Department

The Information Technology and Telecommunications Services (ITTS) department leads the research, development, implementation and support of technologies at Fayetteville State University to benefit students, faculty, and staff towards achieving their respective academic and administrative goals.

ITTS' focus is on enriching:

- The students' learning experience through the use of technologies so they have the necessary marketable skills in the career marketplace when they graduate.

- The Faculty's teaching experience by providing them with the necessary technological tools those are reliable so they can focus on creating and sharing knowledge.

- The Staff's quality of life at work by providing them with the necessary technological tools that are current and reliable so they can serve the FSU community effectively and efficiently.

ITTS Mission Statement

ITTS' mission is to explore, implement, and support the use of technologies to achieve the University's academic and administrative objectives as stated in the University's strategic plan. Its major thrusts are to:

- Stimulate the FSU community in using the technology that have been implemented

- Provide responsive and competent IT service

- Maintain currency on software/hardware by scheduling systematic replacement of obsolete technology

- Monitor and maintain the enterprise systems (e-mail, network, administrative systems, The Web) so they are reliable and operate with least or no unscheduled downtime.

- Increase campus awareness of available technologies through technology orientations and training workshops

The following audit results reflect the areas where FSU 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. FSU has established a reasonable security program that addresses the general security of information resources. *We did not note any significant weaknesses in general security during our audit.*

ACCESS CONTROLS

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

FSU 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. *FSU'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, FSU 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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