



**Mecklenburg County  
Department of Internal Audit**

Advantage Application Audit  
Report 1152  
June 21, 2012

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**Internal Audit's Mission**

Through open communication, professionalism, expertise and trust, Internal Audit assists executive management and the Audit Review Committee in accomplishing the Board's objectives by bringing a systematic and disciplined approach to evaluate the effectiveness of the County's risk management, control and governance processes in the delivery of services.

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**Internal Audit Contacts**

Joanne Whitmore, Audit Director, (704) 336-2575 or [joanne.whitmore@mecklenburgcountync.gov](mailto:joanne.whitmore@mecklenburgcountync.gov)

Christopher Waddell, Audit Manager, (704) 336-2599 or [christopher.waddell@mecklenburgcountync.gov](mailto:christopher.waddell@mecklenburgcountync.gov)

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**Staff Acknowledgements**

Richard Kring, IT Auditor-In-Charge  
Deborah Caldwell, IT Auditor

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**Obtaining Copies of  
Internal Audit Reports**

This report can be found in electronic format at <http://charmec.org/mecklenburg/county/Audit/Pages/Reports.aspx>



## MECKLENBURG COUNTY Department of Internal Audit

**To:** Dena Diorio, Director, Department of Finance

**From:** Joanne Whitmore, Director, Department of Internal Audit

**Date:** June 21, 2012

**Subject:** Advantage Application Audit Report 1152

The Department of Internal Audit has completed its audit of Advantage, Mecklenburg County's financial management system. The audit objectives were to determine whether Advantage information technology controls effectively manage key risks inherent to the accuracy, completeness and validity of transactions and data.

The audit evaluated application controls relevant to transaction input, processing and output and certain application level general controls over system configuration, logical security and business continuity. Specifically excluded from the audit scope were the Advantage Performance Budgeting, Fixed Assets and Business Intelligence components and enterprise-wide general controls. Internal Audit interviewed key personnel, observed operations, reviewed and evaluated policies, procedures and other materials relevant to Advantage information technology controls.

Internal Audit conducted this audit under the guidance of the International Standards for the Professional Practice of Internal Auditing. These standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

### **OVERALL EVALUATION**

The Advantage information technology application and application level general controls evaluated were adequate, appropriate and effective to provide reasonable assurance that risks are being managed to an acceptable level. There were, however, some exceptions noted. The Department of Finance does not have formal, documented policies and procedures for some system administration and control activities. Further, the Department does not utilize unique user identifications for all staff with Advantage administrator rights. Moreover, the Department's Business Continuity Plan has not been tested and updated. Last, Advantage does not have some application controls.

The issues listed below, as well as recommendations and management's responses, are discussed in detail in the attached document. Internal Audit will conduct a follow-up review at a later date to verify that recommendations are implemented and working as expected.

## **ISSUES**

1. The Department does not have formal, documented policies and procedures for some key system administration and control activities.
2. The Department does not utilize unique user identifications for all staff with Advantage administrator rights.
3. The Department's Business Continuity Plan has not been tested and updated.
4. Advantage does not have some application controls.

We appreciate the cooperation you and your staff provided during this audit. Please feel free to contact me at 704-336-2575 if you have any questions or concerns.

cc: Harry Jones, County Manager  
Michelle Lancaster, General Manager  
John McGillicuddy, General Manager  
Bobbie Shields, General Manager  
Leslie Johnson, Assistant General Manager  
Tyrone Wade, Deputy County Attorney  
Board of County Commissioners  
Audit Review Committee

## **BACKGROUND**

### **Advantage Financial Management System**

Advantage is a web-based, integrated management system that resides on the County's client-server architecture. Advantage was customized for the County and has been in use since October 1997. Users input data interactively online and transaction processing occurs real time. Advantage has five major components to provide the County with critical functions to support its operations.

1. Financial management—to manage the County's financial, accounting and reporting needs
2. Procurement—to manage the purchasing lifecycle
3. Fixed assets – to manage fixed asset accounting and reporting needs
4. Performance budgeting—to provide performance information and budget amounts
5. Business intelligence—to access information across the organization

The Department of Finance (the "Department") is the primary business owner of Advantage and their system administrators provide support for key system activities, such as:

- user definition and maintenance
- business process definitions and maintenance of business rules
- production processing support
- coordination of technical configuration, application software maintenance and database support

The County's Business Support Services Agency – Information Technology (BSSA-IT) also provides technical support for Advantage, such as enterprise-wide network security and configuration management, database management and disaster recovery.

### **Application Controls**

Application controls are automated and manual controls specific to an individual application like Advantage. The application controls apply to individual business processes or application systems to ensure:

- input data is accurate, complete and authorized
- data is processed as intended in an acceptable time period
- data is stored accurately and completely
- outputs are accurate and complete
- there is an audit trail to track activity

Examples of application controls include system input controls, such as data input authorization and approval; input system processing controls, such as reasonableness verifications on calculated fields; and system output controls, such as manual reviews of system generated outputs and reports.

## **Application Level General Controls**

Information technology general controls apply to all system components, processes and data across an organization while application level general controls are general controls specific to an application. Application level general controls, such as security management, system access, configuration management, segregation of duties and business continuity, help management assure the confidentiality, integrity, and availability of information assets. Application level general controls also provide reasonable assurance that application resources and data are protected against unauthorized modification, disclosure, loss and/or impairment. The effectiveness of application controls depends upon the effectiveness of the underlying general controls.

## ISSUES, RECOMMENDATIONS, AND MANAGEMENT RESPONSES

**Issue 1:** The Department does not have formal, documented policies and procedures for some key system administration and control activities.

### **Risk Observation**

The Department does not have formal, documented policies and procedures for:

- application security risk assessments and supporting activities to include identification of high risk business processes and transactions
- developing security roles, including ongoing security role maintenance
- user access controls, to include but not be limited to, user identification and authorization; user identifications (UserID) and password management; system delivered UserIDs; sensitive accounts and related privileges; and other sensitive application resources
- configuration management to include purpose, scope, roles, responsibilities, baseline configuration, management commitment, coordination among relevant entities, compliance and implementation of the policy and associated controls
- batch processing verification and error handling
- frequency and scope of monitoring the adequacy of information technology controls and other procedural compliance
- business continuity planning to include development, implementation and testing

Policies and procedures are important control activities to help ensure management's directives are carried out while mitigating risks that may prevent the department from achieving its objectives. Further, documented policies and procedures, along with evaluations and updates, should provide management with a level of assurance that control activities are functioning as intended.

### **Recommendation**

Internal Audit recommends the Department develop formal, documented policies and procedures to include, at a minimum:

- Advantage application security risk assessments
- security roles
- user access controls
- configuration management
- batch processing verification and error handling
- controls and compliance monitoring
- business continuity planning

### ***Management Response***

Agree - The items mentioned above will be added to the Advantage Security Policy and Procedures document. This will be completed within 9 months.

### ***County Manager Response***

The Finance Department's response is appropriate in addressing the findings and recommendations provided by Internal Audit staff.

**Issue 2:** The Department does not utilize unique user identifications for all staff with Advantage administrator rights.

**Risk Observation**

A BSSA-IT staff member who occasionally provides problem resolution and other assistance to the Department continues to use a generic UserID provided by the Advantage vendor for the system's initial implementation to accomplish production processing. The generic UserID, however, is not intended to be used as an individual's UserID to perform ongoing Advantage responsibilities. As a result, staff could inappropriately alter data and security permissions or create and approve unauthorized payment documents and other similar activities without the ability to track and assign accountability.

**Recommendation**

Internal Audit recommends the Department assign unique UserIDs to all staff with Advantage administrative rights. In addition, the Department should remove all generic UserIDs when there is no business need to retain them. For those generic UserIDs that need to be retained, the Department should change the initial default passwords and control their distribution and use.

**Management Response**

Agree - As of May 31, 2012, we have assigned a unique UserID to the user in BSSA-IT who has Advantage administration rights, and we disabled the generic UserID that was setup for system workflow routing.

**County Manager Response**

The Finance Department's response is appropriate in addressing the findings and recommendations provided by Internal Audit staff.

**Issue 3:** The Department's Business Continuity Plan has not been tested and updated.

**Risk Observation**

The Department has not tested and updated its Business Continuity Plan or verified with BSSA-IT it can timely recover Advantage in the event of an emergency. If the Department cannot confirm its Business Continuity Plan will work as intended, including restoring Advantage functionality, it may not be able to resume essential functions, such as issuing vendor payments and recording County revenues and financial transactions.

**Recommendation**

Internal Audit recommends the Department periodically test and update its Business Continuity Plan, including coordination with BSSA-IT to ensure Advantage can be timely recovered.

**Management Response**

Agree - We will contact BSSA-IT and outline a plan to test Advantage in the Business Continuity Plan. This will happen within the next 90 days.

### ***County Manager Response***

The Finance Department's response is appropriate in addressing the findings and recommendations provided by Internal Audit staff. Given the mission-critical aspects of the Advantage system, the Finance Director should update the Executive Team on the status and results of the test.

**Issue 4:** Advantage does not have some application controls.

### **Risk Observation**

Although recent Advantage workflow enhancements have been implemented to help increase application controls, the workflow does not prevent users from discarding payment requests and other documents that are in draft status waiting for document completion. As a result, the documents could be deleted before processing is complete.

In addition, while Advantage automatically enters most dates for financial transactions, the system does not prevent errors when users must manually enter dates. For example, invalid invoice date entries ranged from September 20, 1907 through February 6, 2029.

### **Recommendation**

Internal Audit recommends the Department work with the vendor to add document control features that can prevent inappropriate discards and provide reasonableness checks on date fields to prevent erroneous date entries.

### ***Management Response***

Agree- In February 2012, the Finance Department implemented workflow, and as a result, the timeframe that a document is in draft has been tremendously shortened, however, since there is still a possibility that a "Draft" document can be inappropriately discarded, we will contact the vendor to request a system modification for this issue.

Agree - The Date fields which do not have a reasonableness check are dates that are used for "informational reporting" only. Dates that are used to record a document to the general ledger are controlled by system parameters that we define. However, since these informational dates are helpful for balanced scorecard measures, we will check with the vendor to request a modification to include a reasonableness check on these "informational" date fields.

We will contact the vendor by August 1, 2012 and request these modifications.

### ***County Manager Response***

The Finance Department's response is appropriate in addressing the findings and recommendations provided by Internal Audit staff. The Finance Director should report the outcome of the modification request of the vendor to the appropriate General Manager.