

Internal Audit Report on Fuel and Vehicle Management Systems

County of Henrico



*Proud of our progress;
Excited about our future*

**Internal Audit Report #235a
May 8, 2013**

HENRICO COUNTY INTERNAL AUDIT
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Internal Audit Report on Fuel and Vehicle Management System



Report #235a
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Audit Summary

- Scheduled Audit
- Conclusions on Audit Objectives related to the 4 systems evaluated during this audit:

Objective	Conclusion			
			CAM	
A. Access Controls	▲	▲	■	▲
B. Change Controls	▲	▲	■	■
C. Backup and Recovery and Retention	■	■	■	▲
D. Import / Export Controls	▲	▲	▲	■
E. Vendor Support	▲	▲	■	■

■ Sufficient ▲ Needs Improvement ● Insufficient – Needs Immediate Attention

- Exception Oriented
- 5 Reportable Issues and 2 Other Observations
- Management Action Plans have been developed to address the risks identified.



Contents

- Introduction and Background
- Scope, Objectives and Methodology
- Conclusions on Audit Objectives
- Issues and Management Action Plans
- Closing and Report Distribution



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Introduction

- IT Auditor III Sharon Thornton performed audit work
- Used professional auditing standards
- Examined controls & tested for selective compliance
- All exceptions given to Agency
- Reported control design issues & significant test exceptions
- Work for same Government we audit



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Background: Mission

The mission of Central Automotive Maintenance is to maintain County automotive equipment as economically and efficiently as possible; to manage the automotive refueling facilities; and to provide selected types of vehicles to departments through a monthly or daily lease program.



Background: Central Automotive Maintenance Monthly GL Processing for May 2012

Category Description	Net Amount
Maintenance and Repair – West	\$537,509
Maintenance and Repair – East	\$148,545
Fuel	\$815,183
Daily Rental	\$1,838
Monthly Rental	\$352,867
Report Totals	\$1,855,942



Background: [REDACTED] System

This is a vendor (AssetWorks) supplied package that Central Automotive Maintenance uses to manage the County's Fleet:

- Parts Costs
- Labor Cost
- Fuel Costs
- Work Orders
- Parts Inventory, etc



Background: [REDACTED] System

This vendor (ORPAK) supplied package system is used to:

- Connect to 8 fueling sites and capture/download fueling data to an IT virtual server
- Control who has permissions to fuel at the sites
- Produces detailed fuel transaction reports related to each vehicle and gas card used



Background:



This stand alone hardware and software program is used to:

- Connect to the fuel storage tanks and capture fuel data
- Allow users to run tests throughout month to ensure there is no leakage of fuel from the storage tanks
- Display the amount of fuel in the fuel storage tanks and track daily usage and deliveries




Background:



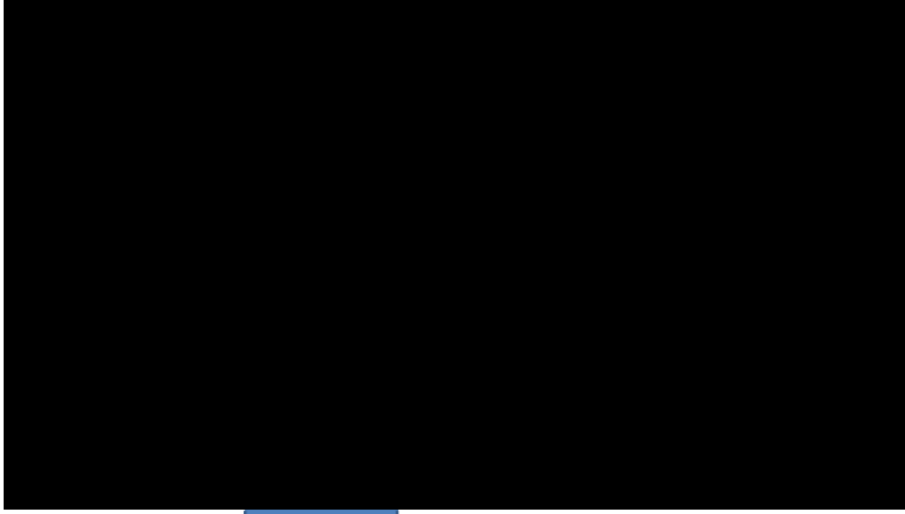
CAM Billing System

This in-house developed Apex system is used to generate an export file from the [REDACTED] System for input into Oracle Financials.


- Users make changes, adjustments and add notes to this file, and create department billing reports for approximately 40 agencies.
- System associates the correct Oracle account information with each charge in the correct format for interfacing with Oracle Financials.
- System maintains a history table for research into prior years' charges and total expenses.



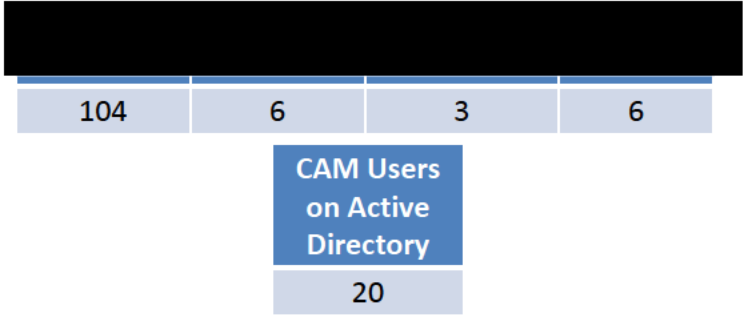
Background: High Level Diagram



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Background: Users



104	6	3	6
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CAM Users on Active Directory
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Audit Scope

- In-Scope:
 - General Services – Central Automotiv... Maintenance and Technical Support
 - [REDACTED] System
 - [REDACTED] System
 - [REDACTED] System
 - [REDACTED] CAM Monthly Billing System
- Out of Scope:
 - General Services – Other Divisions
 - Other Systems




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Internal Controls

Objectives

- Reliability and integrity of information
- Compliance with policies, procedures, laws and regulations
- Safeguarding of assets
- Effectiveness and efficiency of operations



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Internal Controls Cont'd

General Limitations of any Controls

- Errors and irregularities may go undetected
- Inherent limitations in any control structure
- Limitations include resource constraints, legislative restrictions, etc.
- Projection to future subject to risk of change in effectiveness
- Compliance may deteriorate



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Audit Methodology

1. Evaluated internal control systems through completion of questionnaires
2. Validated answers to questionnaires by sample testing and securing evidence
3. Performed walkthroughs to obtain an understanding of the system processes
4. Evaluated regulations, policies and procedures and sample tested for compliance



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Conclusions on Audit Objectives

Objective	Conclusions			
	[REDACTED]	[REDACTED]	[REDACTED] CAM	[REDACTED]
A. Access Controls	▲ Issues 1 & 2	▲ Issue 3 & 4	■	▲ Issue 7
B. Change Controls	▲ Issue 5	▲ Issue 5	■	■
C. Backup, Recovery and Retention	■	■	■	▲ Issue 7
D. Import / Export Controls	▲ Issue 6	▲ Issue 6	▲ Issue 6	■
E. Vendor Support	▲ Issue 5	▲ Issue 5	■	■

■ Sufficient
 ▲ Needs Improvement
 ◆ Insufficient – Needs Immediate Attention

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- ### Issues
1. Strengthen Access Controls Related to Terminated Users
 2. Increase the Frequency of Password Changes and Complexity
3. Establish Unique User ID's and Encourage Changing Passwords
 4. Restrict Vendor Access When Not Needed
5. Document System Upgrades
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Other Observations

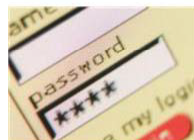
6. Document Procedures for the Month-End Close
7. Strengthen Access Controls for Stand-Alone Computer




Issue 1



Strengthen Access Controls Related to Terminated Users




Issue 1




Criteria

According to Cobit 5, A Business Framework for the Governance and Management of Enterprise IT on the subject of Access Security states that access should be restricted to those entitled and needing it.



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Issue 1



Condition

1. During our testing, we noted three terminated users' access to [REDACTED] was still active after their termination. These [REDACTED] User IDs are [REDACTED]. All were mechanics who use the generic network ID [REDACTED], whose password does not expire, to get to the logon screen of [REDACTED]
2. This [REDACTED] network ID is a domain user and a member of 3 user groups ([REDACTED]). The [REDACTED] network ID can only be accessed from County computers as there is no remote access capability.

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Issue 1


Cause

Oversight

Effect

1. Since mechanics can use a generic User ID to access the network and [REDACTED] if the [REDACTED] ID remains active after termination, they could continue to access the system and potentially make unauthorized changes to the work order records. However, they would have to be on a County computer with the [REDACTED] application installed.


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Issue 1

Effect Cont.

2. The network ID [REDACTED] member groups could be used to secure files on the GS file shares. As such, it may be possible for any terminated/transferred employee who knew the non-expiring account password to use the account to gain access to files assuming they had access to a computer connected to the network.



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Issue 1

Recommendation

1. Since [REDACTED] User IDs are re-used, the password should be changed at the time any of these users terminate.
2. Consideration should also be given to removing the non-expiration setting on the password for network ID [REDACTED].

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Issue 1

Management's Response

1. **Fleet Manager will comply.**
By Whom: Fleet Manager
Completion Date: April 5, 2013

2. The non expiring password for user ID [REDACTED] will be removed. The login account will be moved from a network account to a local login account and will comply with the 90 day password change.
By Whom: Fleet Manager
Expected Completion Date: June 14, 2013

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Issue 2

██████████

Increase the Frequency of Password Changes and Complexity

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Issue 2


Criteria

Per the Henrico County Password Policy:

- Changes are to be made at least every 90 days
- 8 character minimum length
- Complexity requirements are to include three of the four categories:
 - upper case
 - lower case
 - Numbers (0-9)
 - Special characters (!,\$,#,%)

Is your password easy as 123?

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Issue 2

Condition

██████████ users are CAM and other Department users.

- CAM users, except for Mechanics, are procedurally to change their passwords every 6 months; however, this is not enforced.
- Mechanics only have access to work orders. Labor reports are reviewed at month-end for any unusual entries.
- Other Departments:
 - Issued simplistic User ID's and Passwords that are easy to remember. They are not requested to change passwords.
 - Only two Departments have been given the capability to change their passwords.
 - Other Department users do not have any update capabilities in ██████████

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Issue 2

Cause

There is no systematic way to enforce password complexity or duration. GS Tech Support does not have the staff to spend time on resetting passwords when they are forgotten; therefore management tries to create a way to make it easy to remember passwords.

Effect

CAM requirement to change passwords every 6 months is in noncompliance with County standards. Passwords that are not complex and do not change can be easily compromised.

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Issue 2

Recommendation

All CAM users, excluding mechanics, should change their [REDACTED] password ever 90 days and conform to the County's password complexity standards. Consideration should be given to sending out password change reminders and contacting the vendor to see if this can become a systematic feature in future versions.



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Issue 2


Management's Response

The Fleet Manager will have all CAM users, except mechanics, change their password every ninety days according to County complexity standards. However, this procedure will require testing before implementation to ensure that it will work properly and that there are no unintended consequences.

By Whom: Fleet Manager
Planned Completion: June 14, 2013

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Issue 3

[Redacted]

Establish Unique User ID's and Encourage Changing Passwords

[Redacted]

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Issue 3

Criteria

The Henrico County Password Policy's purpose is to establish a standard for creating strong passwords, the protection of those passwords, and the frequency of change. This policy includes all personnel who are responsible for an account (or any form of access that supports or requires a password) on any system/application that resides at any Henrico County facility, who have access to the Henrico County network, or who stores any non-public Henrico County information.

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Issue 3

Criteria

The password policy includes:

- Service account passwords must be changed at least every 365-days or when a team member leaves that may have known the password.
- Avoid using admin and sudo accounts for non-administrative activities.

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[REDACTED]

Condition

1. The [REDACTED] IP addresses for the Fuel Pump Stations brings up the login screen ... [REDACTED]. The system can be accessed using the default login and password which has not been changed at any of the Fuel Pump Stations. Additionally, the default User ID and password can be found on the Internet.
2. There are 6 users with access to [REDACTED]. Two users use the same admin User ID and password and are the primary users of the system.


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Issue 3




Cause

1. It is too difficult to remember and maintain passwords. When there is a problem at a pump site, management needs to access that site immediately and not spend time figuring out the password.
2. Users of [REDACTED] need administrator functions.



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Issue 3



Effect

1. An unauthorized user could gain access through the [REDACTED] system and could compromise data at all sites. An unauthorized user could also turn off the pumps; change rates charged; and change the user ID and password such that the vendor or any other authorized user would not be able to access the system.
2. Without using unique User ID's, there is no accountability. These users have the ability to shut pumps off and to change the rates charged.

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Issue 3

Recommendation

1. Passwords should be changed at the fuel pump sites in accordance with County standards every 300 days. At a minimum the default passwords should be changed immediately. Security would be strengthened if each fuel pump station had a different login and password.
2. Each user of [REDACTED] should have a unique User ID and password. The two admin users should have unique User ID's with the privileges required for their daily functional activities separated from the admin access.

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Issue 3


Management's Response

1. The passwords have been updated to comply with County complexity standards.
2. The accountant and his employee now use their standard County ID and comply with the County standard for password complexity.

By Whom: Fleet Manager
Completion Date: April 5, 2013

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Issue 4




[REDACTED]

Restrict Vendor Access When Not Needed



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Issue 4




Criteria

Remote access for vendor support should be limited to only the times when the access is needed.

Condition

Typically, the [REDACTED] vendor only enters the system through “logmein” when there has been a service call. This software allows the vendor to take over the desktop of the caller. The [REDACTED] vendor also has active VPN access to the network and an active User ID on [REDACTED] which could conceivably be accessed at all times.

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Issue 4


Cause

Unaware that the vendor could access the system at any time.

Effect

There is a risk with vendor support having access to the system at all times as this allows for the highest level of administrative access to the production system without requiring prior management knowledge or authorization of the activities performed.

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Issue 4


Recommendation

We recommend the vendor's VPN network access only be activated during the specific times that management has authorized vendor servicing of the [REDACTED] System.

[REDACTED]

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Issue 4



Management's Response


The vendor access has been disabled and will only be enabled when needed.

**By Whom: Fleet Manager
Completion Date: April 5, 2013**

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Issue 5




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Document System Upgrades



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Issue 5


Cause

Documented support is not retained.

Effect

There is no support of processes being followed when no documentation is retained.

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Issue 5


Recommendation

Only authorized upgrades should be implemented into production. Key steps in the implementation process for upgrades should include testing, documentation, and authorizations.

- Testing should include a testing plan with results (this could be in the form of a checklist for each business testing).
- Documentation should describe the changes (this could be the summary overview from the vendor).
- Authorizations should be at key point such as implementation, acceptance testing, and going live (this should be the email authorizations).

All of the documentation related to testing, documentation of change and authorization emails should be retained in an email folder setup for Updates related to each application.

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Issue 5


Management's Response

The Fleet Manager has prepared a document entitled “Documentation for Authorizing Upgrades to Software Systems” that provides guidance and a checklist to comply with this requirement.

**By Whom: Fleet Manager
Completion Date: April 5, 2013**

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Other Observations

The following slides include additional observations noted during our review which were considered less critical in reaching our conclusions on our audit objectives.

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Issue 6


Document Procedures for the Month-End Close

Month-end close consists of extracting information from the various fuel, parts, and labor systems to reconcile data and generate inter-departmental billing reports. There are some notes related to the month-end close processes and reports are filed in labeled folders. There are also some checklists for running reports; however, there are no fully documented procedures for this process. Documented procedures aid when personnel turnover occurs.



Recommendation: Document month-end close procedures particularly to aid when personnel turnover occurs.

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Issue 6

Management's Response

The accountant has prepared detail instructions for the [REDACTED] month end close out process.

By Whom: CAM Accountant
Completion Date: April 5, 2013


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Issue 7

Strengthen Access Controls for Stand-Alone Computer


The CAM building is not physically secured during the day. The front door is not locked and doors in the hallway are not locked. Showers are generally raised during warmer weather.



There is a stand-alone computer in the Accounting area that stays logged on throughout the day with no screen saver. It is set to show fuel pumps (██████████) or fuel tanks (██████████). If no one is present in this area, an unauthorized user could gain access to these systems and potentially shut pumps off, change fuel rates billed to departments, or cause other disruptions within these systems.

Recommendation: The stand alone computer should be logged off whenever the Accounting area is going to be vacated.

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Issue 7

Management's Response

The accountant and his employee will log off the stand alone computer when the office is vacated.


By Whom: CAM Accountant
Date Completed: April 5, 2013

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Closing

- Appreciate Agency's cooperation
- Follow up on open Action Plans will be performed as completion dates are reached



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Report Distribution

Audit Committee (Mr. Glover, Mrs. O'Bannon, County Manager)	Board of Supervisors, Non-Committee Members
Deputy County Manager for Administration	Director of General Services
Internal Audit Staff	

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