

**Montgomery County, Maryland
Office of Internal Audit
(MCIA)**



**The Department of Liquor Control:
DLC Has Successfully Implemented a New Point of Sale System but
More Improvements Needed
June 27, 2011**

Prepared by Cherry, Bekaert & Holland, L.L.P.

Highlights

Why We Did This Audit

At a cost of over \$1.7 million, the Montgomery County Department of Liquor Control (DLC) implemented the Microsoft Retail Management System (RMS) in 2010 for the purpose of improving the accuracy, timeliness, control, and customer service aspects of Point-of-Sale (POS) processing of customer transactions. The new system is integrated at all 24 DLC stores, the Montgomery County Department of Technology Services (DTS) and with two third party providers. This was a major implementation of hardware and software which replaced an antiquated, unsupported system that had been in place at the DLC since the 1990s. The DLC employs over 300 County employees and processes over \$225 million in annual sales. These factors resulted in the implementation being identified as high risk as part a County-wide risk assessment completed by Montgomery County's Office of Internal Audit (MCIA).

What We Recommend

MCIA is making 15 recommendations to improve the internal control environment at the DLC in such areas as project management, IT training, problem tracking, policies & procedures, security administration, inventory tracking, data restoration and disaster recovery. DLC agreed with the report's findings.

May 2011

DLC Has Successfully Implemented a New Point of Sale System but More Improvements Needed

What We Found

The Department of Liquor Control (DLC) has significantly improved the accuracy, timeliness, internal control and customer service of its Point of Sale (POS) processing of customer transactions by implementing a new system. However, based on our post implementation review, the DLC needs to further strengthen numerous areas of its current IT environment and improve its project management function when performing future system implementations or major enhancements to existing systems.

We found that the implementation of the Microsoft Retail Management System (RMS), including 14 customizations, was executed successfully with one exception cited below. The implementation included the establishment of business partnerships with two key outside service providers, Shift4 and Elavon and undertaking initial steps toward Payment Card Industry (PCI) compliance, although PCI Compliance has not been achieved.

In addition, we found that the Request for Proposal (RFP) published by the DLC in July of 2010 enumerated fifteen key drivers for the implementation of RMS. Of these key drivers, two remain to be put into production. These are the Gift Card Program and Check Verification. Both of these programs are awaiting finalization of a task order/amendment currently being developed by the DLC.

In reviewing the flow of documents from the original RFP through final implementation, we found that the methodology used did not leave a complete audit trail for the achievement of the requirements as defined in the RFP. Without this, it is difficult to evaluate the effectiveness of project management and to define accountability for positive or negative events.

We observed that the contract with the selected system vendor, Systems Technology Group, defined 184 functional requirements. We tested a sample of 113 based on the relevancy of each requirement, and found that all but 1 functional requirements had been implemented successfully.

We also performed limited inventory testing at five stores and found minor variances at two of the five. These variances resulted from miscounts by store personnel of similar products from the same or similar vendors. We were informed that these variances will be corrected when the next physical inventory takes place at the stores. DLC currently conducts physical inventories every two months. Furthermore, as a result of our testing, Retail Operations Management has introduced un-announced, random inventory testing at all stores.

Table of Contents

Objective.....	1
Background.....	1
Description of the System.....	3
Scope and Methodology.....	4
Results.....	6
Conclusion.....	19
Recommendations.....	19
Department Comments.....	20
Appendix A – Key Drivers for Implementation from DLC RFP	21
Appendix B – Detail of Fourteen Customization Descriptions from Contract with Systems Technology Group (STG	24
Appendix C – Department of Liquor Control Formal Comments Memorandum.....	27

Objective

This Report describes the work performed by Cherry Bekaert & Holland (CB&H) regarding our review of the implementation of the Microsoft Retail Management System (RMS) at the Montgomery County Department of Liquor Control (DLC). The objectives of our audit were as follows:

1. Determine the effectiveness of the implementation effort through review of DLC's Point of Sale (POS) System implementation documentation and interview POS System Team Members and Key End Users.
2. Validate, through testing, the implementation of key controls for effectiveness in the following areas:
 - a. Information Technology - general controls related to DLC information technology based upon the COSO/COBIT framework, which is generally accepted in the IT industry, as a standard framework for information technology controls, see pg. 5 for a detailed description of this framework.
 - b. Functional Requirements, Reports & Unique System Customizations – controls defined in the initial POS RFP regarding the fourteen specific customizations required by DLC for RMS implementation and the RMS reporting package.
 - c. Inventory - controls related to transfer and maintenance of store inventory as DLC transfers data into a separate system that controls its warehouse inventory.
 - d. Balance & Control Features - controls designed to assure that transactions captured in the stores are properly transferred to DLC official accounting files and reports.

This internal audit report was performed in accordance with consulting standards established by the American Institute of Certified Public Accountants (AICPA) and generally accepted government auditing standards (GAGAS) established by the Government Accountability Office (GAO), as appropriate. Our proposed procedures, developed to meet the objectives stated above, were reviewed and approved in advance by Montgomery County Internal Audit (MCIA). Interviews, documentation review, and field work were conducted in March and April 2011.

Background

Montgomery County's DLC operates facilities for the wholesale and retail distribution of alcoholic beverages in Montgomery County, MD. The department controls the wholesale distribution of all beverage alcohol in the County, and (subject to one grandfathered exception) the retail sale of all distilled spirits for off-site consumption. The department operates twenty-four retail stores and supplies, on a wholesale basis, beer and wine to approximately 950 licensed retailers. In addition, the DLC operates a county owned warehouse used to stock inventory of all alcoholic products. The warehouse utilizes the Warehouse Management System (WMS) for inventory.

In June 2008, the DLC issued a Request for Proposal (RFP) defining the requirements for a new POS system which included a detailed listing of technical and functional requirements that defined the scope of the desired POS system.¹ The previous POS system had been in place for over a decade and was no longer supported by the original vendor. In addition, the legacy system was limited in terms of how many stores it could support which prohibited implementing that system at future locations. The RFP for the proposed system, which was sent to 27 vendors, enumerated fifteen key drivers which detailed the reasons defined by the DLC for implementing a new POS System which can be found in Appendix A. Information presented in this appendix describes the pre-implementation status and anticipated post implementation status for each Key Driver.

Systems Technology Group (STG) was selected and the DLC entered into a contract with STG in June 2009 which outlined the deliverables of the project, including fourteen customizations. In addition, the contract

¹ Approximately 6 years ago a prior attempt was made by the County to procure new systems for both POS and the warehouse but was terminated after the expenditure of considerable amount of funds.

defined 31 payment milestones defining amounts to be paid to STG upon the completion of agreed upon deliverables. Deliverables of the project as defined in the contract with STG, the Project Plan agreed to by the DLC and STG, and the Milestone Approval Payments are reflected in Table 1 below. The importance of this table is that it illustrates the fact that DLC was successful in implementing RMS at all of the stores well in advance of the holiday season of Thanksgiving through New Years Eve, which is DLC's busiest time of year. This was an essential goal for success because it enabled DLC staff members to become familiar with RMS and to become accustomed to its use well in advance of the busy Christmas season. Had this goal not been met by the DLC, it would have been necessary to delay the implementation until after January 1, 2011.

Table 1 – Contract Milestones

Deliverable	Project Plan Reference / Completion Date	Actual Completion Date
Project Plan	4/January 22, 2010	January 25, 2010
Preliminary PCI Design Validation	8/March 18, 2010	March 17, 2010
Baseline Install	47/December 25, 2010	December 16, 2010
Software Customization and User Acceptance Testing	97/May 28, 2010 and 96/June 1, 2010	June 18, 2010
Technical Training	152/ July 2, 2010	June 28, 2010
Store Staging, Functional Training and Live Support Stores 1 through 24	154-538 /July 13, 2010 thru 538/September 9, 2010	July 10, 2010 thru October 6, 2010
Final Acceptance	539/September 17, 2010	Jan. 18, 2011

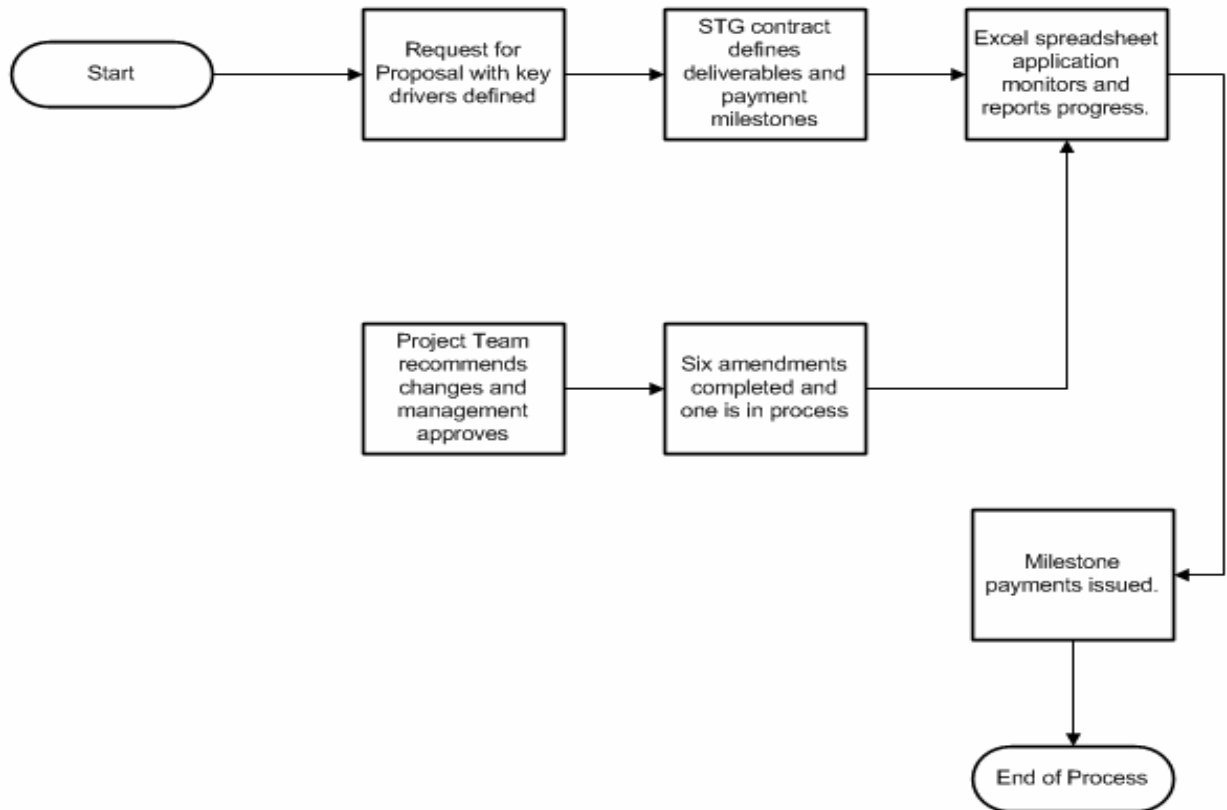
STG's proposal called for the implementation of a Microsoft commercial-off-the-shelf (COTS) product Retail Management System (RMS). RMS is comprised of IBM-supplied retail sales hardware and incorporates the services of two third party providers, Shift4 and Elavon, to receive and process credit card transactions on behalf of the DLC.

Shift4 is a provider of enterprise payment solutions, providing web-based applications that allow its clients to process their customers' credit, check, debit or gift card transactions quickly, accurately and securely. Elavon is a provider of direct credit card transaction processing on behalf of DLC with the credit card companies, Visa, Master Card, Discover and American Express, thus negating DLC's need to deal directly with these providers.

Based on the system functionality of RMS and services provided by Shift4 and Elavon, DLC identified seven amendments to the contract. As of the date of this Report six have been signed. One is pending that includes the Gift Card feature and the Check Verification feature, which is still being developed by the DLC. This future task order/amendment will be submitted to the Office of Procurement upon completion. We reviewed these amendments and verified that appropriate change management processes were followed as the need for changes arose.

Illustration 1 below depicts the flow of documentation that we followed during the implementation process:

Illustration 1 – Implementation Process

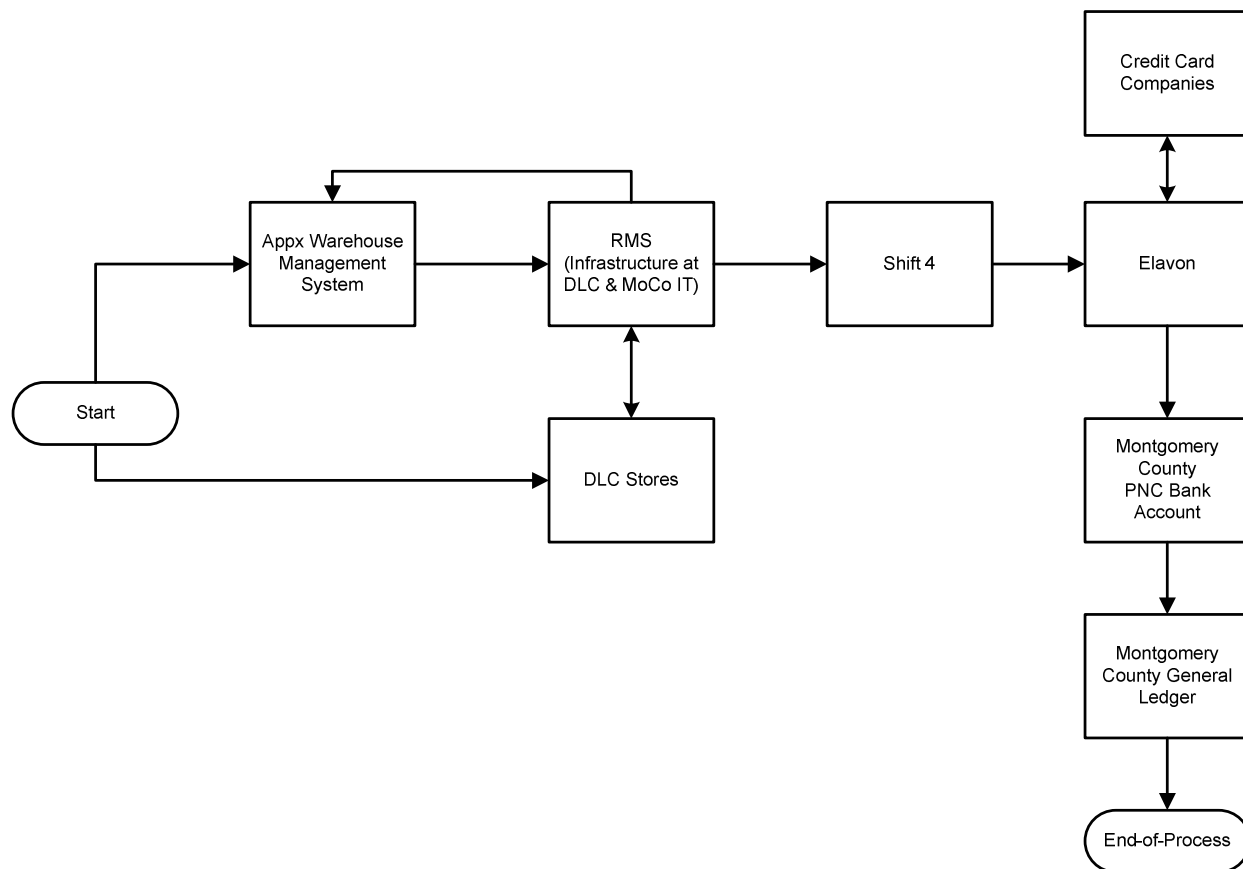


Description of the System

The RMS is integrated between the DLC and their 24 stores, as well as the Montgomery County Department of Technology Services (DTS). In addition, the system is directly interfaced with the DLC's Warehouse Management System and with third party providers Shift4 and Elavon for credit card processing. The illustration below is a visual representation of the flow of information of transactions through the POS System as follows:

- Sales and return transactions are entered into the RMS System by the clerks at DLC stores.
- Store inventories are updated through an interface to the WMS.
- RMS also updates WMS as sales take place and orders are placed.
- Credit card transactions that are processed through RMS are transferred immediately upon receipt at the store to third party service provider Shift4, which authenticates the transactions as valid and hands them off to another third party service provider Elavon.
- Elavon passes the transactions on to the various credit card companies who, in turn, debit the customer and credit Elavon who makes deposits to the DLC's account at PNC Bank.
- Bank statements are to be reconciled monthly to the General Ledger by DLC accounting personnel.

Illustration 2 – System Overview



Payment Card Industry (PCI) Compliance

DLC engaged a PCI compliance certification firm, Arsenal, to perform testing on the RMS which was completed in January of 2011. The PCI Data Security Standard is a set of requirements designed to ensure that all companies that process, store or transmit credit card information maintain a secure environment. As detailed in the “Results” section of this report, there are twelve technology control categories in the PCI standard. The Arsenal review found that DLC was not fully compliant in any of the categories.

Scope and Methodology

We performed our Post Implementation Review of the RMS implementation in two phases. Phase I consisted of a review of implementation related documentation and Phase II involved testing of key controls of the actual implementation process. Phase I results were used as the basis for developing the approach for Phase II testing. Our scope of work performed was limited to the implementation of RMS.

In Phase I we traced the flow of documentation from the RFP through actual system implementation to verify that the system was effectively implemented. We also assessed the effectiveness of whether the implementation methodology resulted in achievement of the DLC’s requirements for the POS System.

In Phase II we conducted interviews and completed testing to verify that the functional requirements and IT controls of RMS were implemented effectively and accurately and were operating such as to provide an appropriate control environment. In addition, this phase included reviews of the RMS customization process, reporting, and inventory controls. In our review and testing of IT general controls (those that transcend

individual applications and apply to the overall IT infrastructure) and application controls (those that reside within and apply to specific applications such as RMS) we relied upon the widely accepted Committee of Sponsoring Organizations/Control Objectives of Information Technology (COSO/COBIT) framework to define the standards against which we tested.

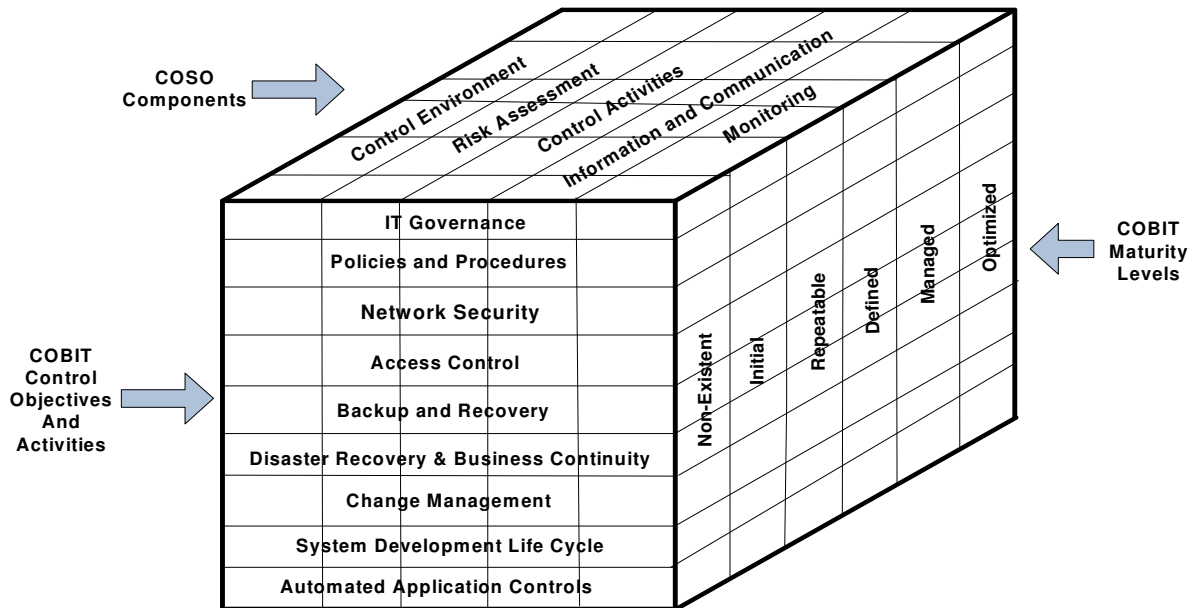
I. COSO – In 1985 the financial services industry created the National Commission on Fraudulent Reporting, also known as the Treadway Commission or the Committee of Sponsoring Organizations for the purpose of defining a framework upon which the control environment of organizations should be based. Today, 26 years later, the COSO framework is the principal standard upon which professional sanctioned audits are based. The objectives of the COSO framework are:

- Effectiveness and efficiency of operation
- Reliability of financial reporting
- Compliance with applicable laws and regulations

II. COBIT – COBIT is an IT framework originally published in 1992 by the IT Governance Institute (ITGI) ITGI

COBIT consists of 37 major control objectives, which in turn are subdivided into approximately 200 secondary objectives. The COBIT framework also seeks to categorize the level of compliance with the various control objectives in terms of “Maturity Levels” ranging from “non-existent” to “optimized”. We did not attempt to categorize DLC’s control environment as to overall maturity level as part of our review, but the goal of DLC Management should be to move all controls to the “managed” level or above. The COSO framework and the COBIT framework together create the model upon which this audit is based. Illustration 3 below shows the relationship between the two frameworks:

Illustration 3 - COSO/COBIT Controls Cube



Results

Our review found that DLC significantly improved its POS process by implementing RMS. This new system has increased functionality including real-time inventory, availability of reporting, and superior system availability, all of which has resulted in improved customer service compared to the prior system. However, we identified several instances where additional improvements or enhancements are needed to strengthen the overall control environment in the following areas:

1. Information Technology
2. Functional Requirements, Reports & Unique System Customizations
3. Inventory
4. Balance & Control Features.

Detail on our findings as well as information on work performed in each area follows.

INFORMATION TECHNOLOGY

PCI Compliance - The DLC has taken initial steps towards PCI compliance for RMS but more work is needed.

The table below shows the results of Arsenal's PCI compliance review which focused on requirements in twelve key areas representing 253 requirement items. Of the 253 requirement items presented in its report, Arsenal concluded the DLC was in compliance with 114, representing a 45% compliance percentage. In order to achieve PCI compliance the DLC must address the remaining 139 requirements. While DLC is not required by the Payment Card Industry to be PCI compliant, DLC management had decided that PCI compliance will be its standard for information protection and security of RMS. We have cross-referenced each of the twelve PCI Requirements to the equivalent Control Area used by MCIA when conducting our review.

Table 2 – PCI Compliance

	PCI Requirement	MCIA Equivalent Control Area	Compliance	Total # of items per Requirement	Requirements in Compliance	Percent Compliant
1	Build and Maintain a Secure Network	Network Security	N	22	0	0.0%
2	Do not use vendor-supplied defaults for system passwords and security parameters	Windows and POS Access Control	N	11	4	36%
3	Protect Cardholder Data	Protection of Confidential Information	N	26	25	96%
4	Encrypt transmission of cardholder data across open, public networks	Protection of Confidential Information	N	4	3	75%
5	Maintain a Vulnerability Management Program	Network Security	N	7	6	86%
6	Develop and	Change	N	40	36	90%

	PCI Requirement	MCIA Equivalent Control Area	Compliance	Total # of items per Requirement	Requirements in Compliance	Percent Compliant
	maintain secure systems and applications	Management and Problem Tracking				
7	Implement Strong Access Control Measures	Windows and POS Access Control	N	9	3	33%
8	Assign a unique ID to each person with computer access	Windows and POS Access Control	N	25	9	36%
9	Restrict physical access to cardholder data.	Physical Security	N	24	21	88%
10	Regularly Monitor and Test Networks	Network Security	N	30	2	7%
11	Regularly test security systems and processes.	Windows and POS Access Control	N	14	0	0%
12	Maintain an Information Security Policy	Windows and POS Access Control	N	41	5	12
Overall Compliance				253	114	45%

At this time, DLC does not have a designated Security Administrator whose role would include defining the DLC's Comprehensive Information Security program and overseeing the implementation of the program with the objective of achieving PCI compliance in a COBIT/COSO based environment. The current management and staff of DLC Information Technology are committed to ongoing management and day-to-day operations and cannot realistically be expected to perform this role as well. The Comprehensive Information Security Program would define Management's policy regarding all the COBIT categories shown on the cube in illustration 3, including how access is granted to all users, how the network is protected from internal and external threats, how changes are made to applications, and how new systems are implemented. An organization the size and complexity of DLC with significant IT security issues to deal with cannot afford to maintain these controls at the "non-existent" or "Initial" COBIT levels. A comprehensive IT security policy under the direction of a designated Security Administrator is an important step toward moving Information Security Controls to the "Managed" level.

IT Controls Gap Analysis – Many IT controls recently tested by Arsenal but additional controls tested by MCIA.

As part of our testing, we compared the COSO/COBIT framework-based control areas to those addressed by PCI Compliance firm Arsenal in order to identify which IT controls would still require our testing. The table below illustrates our gap analysis for each of the ten areas to be tested for a post implementation review:

Table 3 – IT Controls Gap Analysis

MCIA Equivalent Control Area	MCIA Control Activity	Covered by Arsenal?
Network Security	Firewall	Yes
	Penetration Test and Vulnerability Assessment	Yes

MCIA Equivalent Control Area	MCIA Control Activity	Covered by Arsenal?
	Anti-Virus, Anti-Spyware	Yes
	Patch Management	Yes
	System Administrators	Yes
	Incident Reporting	Yes
	Remote Access	Yes
Protection of Confidential Information	Storage of Confidential Information	Yes
	Encryption of Confidential Information	Yes
	Encryption Key Security	Yes
Change Management & Problem Tracking	Policies and Procedures for Change	Yes
	Emergency Changes	No
	Problem Tracking	No
Windows and POS Access Control	Password Policies	Yes
	Awareness Training	Yes
	Access Request Forms	Yes
	Terminations	Yes
	Job Responsibilities and Segregation of Duties	Partial
	Super Users	Yes
	Periodic Review of Access	No
Physical Security	Access Control	Yes
	Hardware Adds and Deletes	Yes
	Environmental Controls	No
	CCTV	Yes
Backup & Recovery and Disaster Recovery		No
Conversion		No
End User Training		No
Third Party Service Providers		No
Service Level Agreements		No

The Controls Areas colored green were tested by Arsenal in January 2011 and therefore and we did not retest them. The Control Areas colored red were not tested by Arsenal and therefore we tested them as part of our post implementation review. The one Control Area colored yellow was partially tested by Arsenal. Therefore, we performed additional testing in this area to satisfy the requirement of our audit. Our testing results follow.

Change Management - The DLC has proper change management procedures in place; however, the procedures should be formalized

Routine system changes were tested as part of the Arsenal change management testing described in Table 3 above. Therefore, we performed our review to determine whether the processes are in place to ensure that changes made as a result of an emergency situation are reviewed and approved within an appropriate time period after implementation and that the changes do not adversely impact other functioning parts of the system.

We inspected the emergency changes to POS and IT infrastructure. We found that DLC's emergency change management procedures are the same as the regular change management procedures. When issues occur, DLC contacts STG and then the changes are implemented in the testing servers first. If tested successfully, the DLC IT Manager determines whether to deploy the changes to the production servers in the production environment. The changes are tested in the five lowest volume stores for a week before deploying the changes to the remaining stores. We tested two of the five emergency changes since July 1, 2010 for management approvals, timeliness and appropriate documentation and found no exceptions.

Our review found that the DLC has proper change management procedures in place; however, no formal change management policies and procedures have been documented. The purpose of such a document is to manage changes in a rational and predictable manner so that staff and management plan accordingly.

Problem Tracking - The DLC lacks a comprehensive Problem Management tracking system.

We also performed our review to determine whether the DLC has put in place processes to ensure that documented and auditable procedures exist for problem tracking and reporting for timely resolution of POS related incidents and problems.

We found that DLC uses an Excel spreadsheet to document problem tracking status. All issues and tasks are logged and documented in an action item sheet that is manually synched in to the DLC network shared drive. Once the issue or tasks have been resolved, it is moved to the closed item sheet. DLC holds weekly staff meetings to follow up on the action item list to ensure all issues are resolved in a timely manner to support their business needs.

Our review found that the existing Excel spreadsheet process for Problem Management Tracking does not provide a sufficient audit trail including documentation of requestor names, management approval, timelines for implementation and follow-up activities such as can be provided by commercially available problem tracking and ticketing systems, one of which DLC is already licensed to use.

Windows and POS Access Control - The DLC does not always document periodic reviews of system reports.

We reviewed whether there are processes in place to require that POS application-level access is granted to personnel based on their job responsibilities and segregation of duties rules. We also looked to ensure that DLC has processes in place for periodic review by management of access rights granted to individual POS users.

We inspected user access for all DLC IT and store employees, including store clerks both full time and part time, store managers and assistant managers via the employee list provided by the DLC IT department. We found that DLC uses the same role based level of access for all store employees including store clerks and managers. We also found six IT staff with full administrative level access to the POS system. Per discussion with the DLC IT Manager, DLC is aware of the risk of allowing multiple personnel with administrative access to the POS system but has determined that it is necessary for business needs. As for compensating controls, the DLC operations manager is to review exception reports such as the daily Marked Down and Sales Transaction report.

This approach, when applied diligently, is adequate to ensure all issues are followed up and mitigated timely. However, our review found no documented evidence that the daily Marked Down and Sales Transaction Reports are being reviewed and approved by management. These are the daily RMS System reports that show sales at reduced prices including mark downs granted at the store level. The DLC uses this review of the Daily Sales and Marked Down Reports as compensating controls for allowing same role-based level of access for all employees. At this time, we found no documented evidence that this compensating control is taking place. Without adequate review and documentation of the Daily Sales and Marked Down Reports, there is reduced assurance that fraudulent activities can be detected and reviewed by the appropriate management. While DLC management has previously expressed concern about the required additional time required to document these reviews, we believe the added level of individual accountability is worth the additional documentation time.

Concerning access rights reviews, we found that DLC had not been performing periodic reviews of user access and the first review was completed on March 28, 2011. DLC's IT Manager compared the County's employee list with the list of current DLC employees for review of terminated users. Since all employees have the same level of role-based access, review of new user access and modifications are not applicable for review of access. However, periodic reviews would help to identify any terminated users who have remained active in the system. DLC plans to perform a review of terminated users every 90 days going forward, based upon reports of terminations for the period, provided by Human Resources. The lack of a Comprehensive Information Security

Policy cited under “IT Controls Gap Analysis” is likely the root cause of this problem. Such a policy would address periodic review of user access to help assure that only authorized users have access to DLC information.

Physical Security – DLC and DTS have implemented proper physical and environmental controls.

We reviewed whether DLC has processes in place to ensure that only authorized personnel can gain access to the POS server room and its components. We also looked at any processes to control addition and deletion of POS hardware including servers, registers and POS devices from the network and the associated inventory records. Additionally we reviewed whether the processes are in place to ensure that the IT infrastructure in the server room, warehouse and stores that support POS is protected from hazards. This should be done by having (1) an uninterruptible Power Supply (UPS) systems to combat power surges or temporary outages, (2) an environmental monitoring and control for temperature, water and fire and (3) an alarm and/or CCTV capability in place to monitor and report intrusions into POS network components.

We found that DLC has appropriately designated the DTS Data Center as the host facility for its servers. The DTS Server Room is configured with appropriate controls to perform this task on a County-wide basis. DTS hosts DLC servers and inspected physical security of the server room at the department of technical services. We inspected the list of personnel with access to the server room and toured the server room. We found that the access to the building is controlled by an alarm system and CCTV camera system 24/7 and access to the server is via ID badge card reader. The server room has diesel powered UPS and six AC units which are running on a separate power system. We noted that there is FM200 fire suppression system as primary and water sprinkler as secondary. The server room has raised floors and smoke detectors. Only DLC IT network operations center staff have access to the server room.

Backup & Recovery & Disaster Recovery - Restoration of Data and Testing of the DLC Disaster Recovery Plan need to be implemented.

We reviewed whether the processes are in place to ensure that (1) the appropriate strategy exists for backup of POS data and programs including a regular schedule and monitoring of backup jobs, offsite storage of backup media, and proven restoration capability and that (2) the strategy is implemented and in place. We also examined whether the processes are in place to facilitate disaster recovery and business resumption of critical POS functions at times of disaster.

We learned that the DTS provides backup services for the DLC. No backup has been retained for the store registers since all registers data are transferred to the store server. The store servers and database servers are backed up daily through incremental, monthly and weekly backup. We inspected all daily, weekly and monthly backup for all 24 servers and found no exceptions. DTS notifies DLC of system backup issues. Based upon discussion with the DTS Data Center Manager, we determined that DLC and DTS work closely to ensure any backup failure issues are mitigated in a timely manner. DTS takes the backup tapes off-site daily. We inspected the log for the month of February 2011 and found no exceptions.

While DTS performs data backup for the DLC, we found that no data restoration test has been performed on a regular basis. Data availability is a top priority and the need for the DLC to compile a thorough disaster recovery plan and its testing is essential. Without performing periodic restores of data and informing DLC management of results, DLC can not be confident that POS files can be recovered and restored on a timely basis.

We observed that DTS has developed a written Disaster Recovery Plan, but has not tested the ability to recover POS processing in the event that an incident occurs that renders the system inoperable at the current location. DTS should be required to demonstrate that POS operation can be restored at an alternate location within a time period mutually agreed upon between DTS and DLC.

System Development Methodology - The DLC needs to utilize a more robust Systems Selection Process and Project Management Methodology for future system implementations at the DLC.

We determined through interviews with IT and Retail Operations Management that controls were in place to ensure accuracy, validity and completeness of data converted from the old POS System to the new POS System. We also reviewed the Arsenal PCI Testing documentation to determine that controls are in place or recommended for protection of information through PCI compliance. We learned that DLC implemented the new POS system as of October 2010 and DLC IT and Retail Operations Departments worked jointly to ensure the accuracy, completeness and validity of the data. During the implementation period of May through October of 2010, DCL was running the old and new POS systems simultaneously from the Warehouse Management System. Once the accuracy, completeness and validity of the data were verified DLC removed the old system. Controls over conversion appear to have been properly designed and implemented.

In reviewing the implementation documentation of the POS system, we observed that there was no archive of signed-off test scripts and user acceptance testing for all modules of POS. Unless there is a clear audit trail from system requirements definition, through systems design, through all phases of testing and finally through implementation, there can be no assurance that all requirements were met, fully tested and implemented according to a defined project plan and with appropriate user approval.

The DLC plans to move to a new warehouse in September 2011, after which time they plan to implement a new warehouse management system. Currently Montgomery County is licensed to use the Oracle Warehouse Management System and tentative plans are to implement this system at the DLC. We learned through discussion with the IT Manager that specific warehouse inventory systems exist that may serve the needs of the County better than the Oracle solution. However, we found that there has been no preparation or analysis of detailed functional and technical requirements for the new warehouse management system or evaluation of the Oracle solution against other potential systems, which may or may not derive the need for a formal RFP. Without the completion of these steps a solid foundation has not been laid for the future implementation of a warehouse management system.

Training - DLC IT Staff appear adequately skilled to operate under its current environment but additional training may be necessary with the implementation of proposed new systems.

We determined (1) that DLC IT personnel and end users were provided certain training prior to and during the rollout of the POS system and (2) whether any training plans and materials are in place for ongoing and future training. We found that both IT and store employees are trained on-the-job, however, there is no strategic training plan designed for each employee's needs. This kind of planning is necessary for IT employees and senior operational staff members to be able to keep up with developments in technology that will impact DLC in the near future. Training needs must be anticipated and implemented just ahead of new technology. DLC employees receive yearly training and must pass a training test at the end of the training session and sign off the training document indicating that the user has passed the training and understood the training requirements. We inspected the RMS training manual for store employees and found that it contained sufficient information for managers and clerks to utilize the system in their day to day activities.

DLC has new employee training and IT training programs in place; however, we found no documentation that new employees were actually trained. With the exception of the staff currently trained on RMS, there are no IT staff members trained in client/server, relational database on-line, real-time applications, which will be required for the new Warehouse Management System. This circumstance poses a serious obstacle to successful implementation of the new system. An additional training segment is needed for the IT staff that includes an ongoing performance measurement capability to determine the current capabilities and skills as well as the potential capabilities and skills of each IT team member and a long range training plan for each staff member.

Third Party Service Providers - Established third party service providers are used but there is no ongoing due diligence by DLC to review controls of each service organization.

In discussion with DLC management, we learned that there were no processes in place for periodic review of the control environment of the third party service providers Shift4 and Elavon. Without due diligence over the control activities of third party service providers, there is insufficient assurance that the control environments of those third parties over DLC information are not at least equal to those of DLC. We also learned that Elavon

makes an industry standard SAS 70 Report available to its clients, which would serve as a basis for this review purpose. A SAS 70 is a report completed by an independent CPA firm assessing the controls of a service organization. At the time of our review DLC had not requested, received or reviewed a copy of the Elavon SAS 70 report. Shift4, on the other hand, does not provide a SAS 70 but an equivalent could be derived per request. Such periodic reviews would provide DLC with information necessary to determine whether or not the control environment of the service providers was at least as effective as the DLC's. While we recognize that PCI compliance has been achieved by these vendors, the PCI standard applies only to a limited requirement of control over the processing of credit card information. A well executed SAS 70 Report on the other hand addresses a much broader range of controls including vendor required user controls which in turn provide the users of a service organization additional assurance regarding a service provider's overall control environment .

Formalization of Roles and Responsibilities between DLC and Key Service Departments

The DLC functions as a separate department within the County Government operating a large enterprise in the form of 24 retail stores and a warehouse. DTS and the Department of General Services (DGS), provide essential shared services to the DLC in support of ongoing business operations. In addition, the DGS Services provides support to DTS on behalf of DLC. We determined through our testing or were told by DLC officials that the following issues negatively impact RMS:

- Current plans to implement gift cards and check verification as part of POS is delayed for an indefinite period. According to DLC staff procurement issues are a factor. However, it should be noted that, at the time of this report, the DLC is currently negotiating the scope and preparing a task order/amendment to be submitted to the Procurement Department.
- Opening of a new liquor store takes two years to complete due to the various responsibilities of DGS, thus impacting the competitiveness of DLC in its marketplace.
- Deployment of new hardware by DLC is often delayed due to other responsibilities of DTS.
- Problems regarding DLC's servers are often not responded to in a timeframe appropriate to the service hours of DLC stores because DTS server support has been only available during weekday daylight hours.²

As shown above, DLC is dependent upon the DTS and DGS for many other critical technical and business functions. According to DLC officials they are currently unable to consistently forecast implementation dates and completion dates. One factor contributing to this shortcoming appears to be a lack of formal agreements between DLC and the other two departments that define roles and responsibilities for all parties. Such agreements should include committing the departments involved to quantifiable and measurable levels of service and timeframes. Unless users of shared services in an enterprise environment can depend upon a certain level of service from shared service providers their ability to meet business goals is potentially compromised. DLC officials believe, and we agree, that implementing formal agreements between DLC, DTS, and DGS can be a positive step towards ensuring that DLC can more effectively and efficiently meet its business objectives. In this regard, we have learned during the course of this audit that certain forms of service level agreements are currently made available by DGS to its internal clients. Additionally, DTS management told us that they would be happy to work with DLC, if necessary, to define a higher level of service and to define the related costs to DLC.

FUNCTIONAL REQUIREMENTS, REPORTS & UNIQUE CUSTOMIZATIONS

Attachment H of RFP for the POS System defined 184 functional requirements, which are business process needs which the DLC expected bidders to fulfill. Upon review, we identified 116 key functional requirements for testing, as noted in Table 4 below:

Table 4 – Functional Requirements

Functional Area	Total Number of Requirements	Number of Requirements Tested
-----------------	------------------------------	-------------------------------

² Recently DLC staff has told MCIA they are now in discussions with DTS to obtain after hours service as well.

Functional Area	Total Number of Requirements	Number of Requirements Tested
Customizations	56	56
Reports	49	49
Miscellaneous	79	11
TOTAL	184	116

In addition, we randomly selected 11 miscellaneous functional requirements to be verified through observation only.

Customizations – DLC has successfully implemented all fourteen customizations.

The Contract for the POS System between the DLC and STG enumerated certain customizations which were required. The need for the customizations was based upon the fact that the baseline off-the-shelf RMS system fulfilled all but certain functional requirements. Fulfillment of those additional functional requirements was defined in terms of fourteen customizations identified in Paragraph 2.2.4.1 through 2.2.4.14 of the contract with STG. In order to verify that all of the customizations were working as required and fulfilling the specific functional requirements, we cross-referenced the customizations from the contract to specific functional requirements in the RFP. We then met with the Manager of Retail Operations and the Manager of IT and reviewed each customization online in the RMS Training Room at the DLC Headquarters verifying that each functional requirement was fulfilled. Table 5 below summarizes the results of our review of the fourteen customizations. Details of the fourteen customizations noted below can be found in Appendix B of this report.

Table 5 - Customizations

Contract Reference	Customization Description	Number of Functional Requirements Reviewed	Functional Requirements Met?	Customization Implemented?
2.2.4.1	Centrally managed cashier functionality in terms of the assignment of ID's and passwords to individual POS users	4	√	√
2.2.4.2	Auto logoff functionality in terms of the ability for the System to automatically logoff a user after fifteen minutes of idle time	2	√	√
2.2.4.3	Ability to select either one of the two drawers upon logon to a register	1	√	√
2.2.4.4	Ability of Store Managers to print an order book online to show three one-week periods of sales and to flag an order for special handling	5	√	√
2.2.4.5	Ability to Transfer Inventory Items from one store to another	6	√	√
2.2.4.6	Ability to roll-up sales of "Like" items on receipts, registers and customer display screens	1	√	√
2.2.4.7	Ability to post sales to escrow accounts in POS – An escrow accounts is an account where a customer has paid a certain amount in advance and his sales are posted against that amount.	2	√	√
2.2.4.8	Ability to provide discounts for case purchases and to change prices at individual	9	√	√

Contract Reference	Customization Description	Number of Functional Requirements Reviewed	Functional Requirements Met?	Customization Implemented?
	stores for individual items			
2.2.4.9	Ability to display and print total items numbers on receipts, customer facing displays and registers at both the overall level and the SKU level	2	√	√
2.2.4.10	Ability to automatically print regular price and sale price for items that are on sale without additional intervention	1	√	√
2.2.4.11	Ability to Scan Driver's Licenses and Show Possessor's Date of Birth to Clerk without having him or her calculate it	1	√	√
2.2.4.12	Ability to process a return based upon a receipt	1	√	√
2.2.4.13	Ability of the POS System to interface with the vendor Shift4 for credit card transaction processing	N/A	N/A	√
2.2.4.14	Interface between Warehouse Management System and POS	21	√	√
TOTAL TESTED			56	

We found that every functional requirement related to the fourteen customizations was fulfilled with the exception of the ability to flag promoted items (dated discount sales items) on order books shown on-line. This was one of the five functional requirements of 2.2.4.4 in the above table. According to DLC this customization was deleted from the DLC's requirements because there was no positive response on this feature from any bidder.

Reports –DLC has not implemented one functional requirement related to reporting due to lack of system of functionality.

We reviewed the reports and functional requirements in Table 6 below with the Manager of Retail Operations and the Manager of Information Technology and verified that all reports described in the Functional Requirements Section of the POS RFP are indeed produced as described:

Table 6 - Reports

Report Description	Number of Functional Requirements Reviewed	Functional Requirements Met?	Report Implemented?
Register Shift Total Reports	17	√	√
Daily Exception Report	1	√	√
Markdown Report	1	√	√
Line Item Void Report	2	√	√
Return Detail Report	1	√	√
Suspended Sales Report	1	√	√
Inventory Change Log	6	√	√
Associate WMS invoice numbers to items charged to the store from that invoice	1	No, due to WMS limitations	No

Report Description	Number of Functional Requirements Reviewed	Functional Requirements Met?	Report Implemented?
Finance Summary Report	14	√	√
Files Used to transfer information from POS to WMS	2	√	√
RMS Report Generator Export	2	√	√
Report of Negative on Hand Inventory Items	1	√	√
TOTAL TESTED		49	

Based on our testing, we concluded that all report related functional requirements selected for testing, except for the one related to WMS invoice numbers described in **Table 7** above, have been met. This requirement was not met because of limitations in the Warehouse Management System and not because of RMS issues.

Sales Related Functional Requirements - DLC has implemented all sales related requirements.

In order to better understand the sales control process, we also reviewed other functional requirements noted in Table 7 below and verified that they were implemented properly:

Table 7 – Sales Related Requirements

Other Sales Related Functions	Number of Functional Requirements Reviewed	Functional Requirements Met?	Function Implemented?
Unique transaction sequence number per register	1	√	√
Refunds for any tender type	3	√	√
Sales tax report showing taxable and non-taxable sales	2	√	√
TOTAL TESTED		6	

Functional Requirements Verified Through Observation – One functional requirement not yet implemented.

We reviewed the functional requirements in Table 8 below through visual observation through the course of our review in order to determine if each requirement had been met and implemented:

Table 8 – Functional Requirements Verified Through Observation

Functional Requirement	Functional Requirements Met?	Function Implemented?
FA-2 – The system supports existing store network	√	√
FA-4 – Store inventories are available real-time.	√	√
FA-5 – Capacity for other stores to view other store’s inventories.	√	√
FA-7 – Compulsory cash drawer close.	√	√
FB-2 – The system provides an audible indicator for each scanned item.	√	√
FB-5 – The system accommodates UPC scanning at the register.	√	√
F-11 – The system provides a user defined header on every receipt.	√	√
FP-49 – The system allows users to search for sales data by month or user defined periods.	√	√
FP-48 – The system allows users to search for items with negative inventory.	√	√
FB-3 – Audible indicator is different for correct versus incorrect items as items are being rung up by a cashier, enabling audible recognition of mismarked items.	No - deemed technically not possible. (No	No - deemed technically not possible. (No

Functional Requirement	Functional Requirements Met?	Function Implemented?
	system vendor could do this.)	system vendor could do this.)
FD-9 – Accommodates options for gift cards.	No - Pending implementation in Phase II.	No - Pending implementation in Phase II.

INVENTORY

Product & Physical Inventory - Controls over inventory of DLC IT equipment and product need to be strengthened.

We reviewed a population of twenty-four DLC stores and randomly selected 5 to conduct on-site testing of physical access controls and real-time product inventory. For all 5 stores we verified that security cameras were properly placed and operating as intended. In addition, each RMS computer and server was properly secured to limit access to only authorized individuals. While on-site, we randomly selected one to two products to test for accuracy of inventory. For each item we performed a physical count of product inventory on-site and compared that to the inventory count within RMS. Table 9 below shows the results of our on-site store inventory testing:

Table 9 – On-site Store Inventory Testing

Store #	Store Name	Products Tested	Physical Count	RMS Count
11	Walnut Hill	Dom Perrignon Champagne	10	10
19	Pike	Cherry Herring Southern Comfort	7 13	7 13
6	Kingsview	Nicolas Catana Zapata 2003 Bols	5 8	6 6
20	Darnestown	Finlandia Vodka SKU36102 Finlandia Vodka SKU35432	7 20	7 20
24	Montrose Crossing	Hogue Riesling Level Vodka	16 11	15 11

As indicated, we found discrepancies in actual vs. RMS inventory counts at 2 of the 5 stores. Upon further investigation, we were told by DLC staff that these discrepancies were due to miscounts by store personnel of similar products from the same or similar vendors. For example, there are numerous varieties of Hogue Riesling with similar names and in similar bottles. Management is aware of this problem and plans to continue to address it through training and more frequent test counts. Store inventories are conducted at two month intervals, but, in addition, as a result of our findings, un-announced, random test counts will now be conducted from time-to-time at all stores.

Also, during our store visits, we interviewed each of the 5 store managers to determine their overall assessment of the new system. Table 10 below shows the questions asked and the number of resultant responses from our five interviews. Available responses to questions 1 – 6 were “About the Same”, “Better” and “Much better”. Available responses to questions 7 – 8 were “Low”, “Medium” and “High”. Based on the interview results below, store managers viewed the new system very favorably.

Table 10 – On-site Store Manager Questionnaire

Question	Responses
1. How would you compare the new POS System to the old system in terms of the amount of information available?	Much Better-5

2. How would you compare the new POS System to the old system in terms of the accuracy of information available?	Much Better-3 Better-1 About the same-1
3. How would you compare the new POS System to the old system in terms of ease of use?	Much Better-5
4. How would you compare the new POS System to the old system in terms of customer service?	Much Better-5
5. How would you compare the new POS System to the old system in terms of reliability?	Much Better-5
6. How would you compare the new POS System to the old system in terms of response time?	Much Better-5
7. How would you rate the training you received prior to the conversion to the new system?	High-2 Medium-3
8. How would you rate the training manual and related “cheat sheets” that you have received for POS?	High-5

In addition to the store visits, we conducted a limited product inventory test at the DLC warehouse. The warehouse inventory is maintained in the APPX Warehouse Management System (WMS). Table 11 below shows the results of our Warehouse inventory testing:

Table 11 – Warehouse Inventory Testing

Location Name	Products Tested	Physical Count	WMS Count
DLC Warehouse	Woodchuck Variety Pack	115.5	116
	Chateau Marjosse Entre Deux	36	36
	Columbia Crest Two Vines Shiraz	56	59

With regard to the Warehouse inventory, we observed that the variance in Woodchuck Variety Pack was reconciled when we found a broken pack in the warehouse wherein half of the contents had been damaged and thrown away, thus logically reconciling the count of 115.5 versus 116. The variance in Columbia Crest Two Vines Shiraz was attributed to the fact that there is no real-time updating of the WMS inventory. Management stated that the three case variance was most likely caused by three cases having been pulled for delivery, but not yet entered into the WMS System. Since the WMS System is not real time, but is batch posted, it will only reconcile to the physical inventory when all posting is caught up and product movement has stopped for the day. Furthermore, the physical inventory is only reconciled to WMS once per year which represents a recent change from a more frequent inventory schedules in the past.

We also inspected POS hardware inventories located at the DLC headquarters office. We learned that only the third party service provider, IBM, manages the inventory list. This list is not currently reviewed by the DLC. We obtained the hardware inventory list from DLC and randomly selected 25% of the population for testing. There were a total of 30 types of IBM hardware at DLC headquarters. We tested eight line items and found one of the eight missing from stock. Unless there is an accurate inventory list, effective oversight over the purchase and disposal of inventory will be more difficult to maintain.

BALANCE AND CONTROL FEATURES

Transaction Types - adequate balance and control processes are in place within the DLC for posting of cash, checks, credit card transactions and escrow transactions.

We verified that daily procedures are in place to provide reasonable assurance that as transactions flow from DLC stores through DLC Accounting and through Shift 4 and Elavon, there are no transactions that are lost or posted incorrectly. In order to verify these controls, we met with three County personnel; the Accounting Clerk who is responsible for daily and monthly balance and control of cash and check transactions, an Administrative

Specialist who is responsible for daily and monthly credit card transaction balance and control, and a Senior Financial Specialist who is responsible for balance and control of escrow transactions. Escrow transactions are those made by DLC customers who have so called escrow accounts by which they are pre-authorized to purchase a pre-determined dollar amount of product thus reducing their renewable escrow balance. Escrow account balances are maintained in the Warehouse Management System; not in RMS. Through inquiry and observation, we walked through the process for each transaction type applicable to RMS. Table 12 below vertically summarizes the process for each type of transaction:

Table 12 – Transaction Types

Cash and Check Transactions	Credit Card Transactions	Escrow Transactions
1. Accounting Assistant receives daily deposit packet from each store.	1. Administrative Specialist receives the Finance Summary Report from POS on a daily basis listing credit card sales by store.	1. DLC accountant receives Daily Financial Summary Report from POS and all escrow transaction tickets for that day from each store.
2. Packet contains deposit slips and Daily Tender Summary Report signed by Manager	2. Administrative Specialist verifies that store totals agree with Shift4 Dollars on the Net web site totals and reconciles differences.	2. DLC accountant verifies escrow tickets by store against the Finance Summary Report and reconciles any differences.
3. Accounting Assistant reconciles total deposits to the cash and check numbers on the Daily Tender Summary Report.	3. Next day Administrative Specialist reviews and reconciles Shift4 to Elavon for Visa, Master Card, Discover Card and American Express based on on-line Elavon report.	3. DLC accountant posts individual escrow transactions to individual customer escrow accounts on APPX Warehouse Management Systems.
4. Reconciled deposit amount is entered into a deposit spreadsheet, which is sent to the Treasury Division at month end.	4. Reconciled numbers for each credit card provider are entered into a cumulative spreadsheet after verification that funding for the day by Elavon is complete.	4. Warehouse Management System tracks the remaining balance in the licensee’s escrow account.
5. At month end Accounting prepares journal entries for sales by store.	5. Administrative Specialist sends Daily Revenue Transmittal Form to Treasury	
5. Accounting receives report from Treasury showing cash and check transactions.	6. Treasury posts transaction totals to the County’s bank account with PNC Bank for DLC sales.	
6. Accounting reconciles each store’s bank statement to the Month-End Report from Treasury.	7. At month end the spreadsheet is provided to the Accounting Assistant who forwards information to Treasury	
	7. At month end Administrative Specialist receives statement from PNC Bank, which is reconciled to cumulative spreadsheet.	
	8. Administrative Specialist notifies the Controller Division’s Bank Reconciliation Unit of	

Cash and Check Transactions	Credit Card Transactions	Escrow Transactions
	reconciliation by sending them a Reconciliation Statement as well as a full reconciliation of the PNC bank account.	
	9. The Controller Division's Bank Reconciliation Unit reviews and certifies the reconciliation of the PNC account.	

With regard to the monthly reconciliation of the DLC account at PNC Bank, MCIA observed that no specific date has been set for the movement of reconciliation certification and entry to Oracle. In the meantime, the Finance Department is several months behind in execution of this task.

Balance and Control Reports – DLC Retail and Operations Department reviews daily reports but does not maintain an audit trail of this review.

Also related to Balance and Control, we observed that the Retail Operations Department conducts a daily review of reports from POS in order to mitigate the possibility of fraudulent activities. These reports include, among others, the Daily Markdown Report. However, we observed that there is no process in place to document and provide an audit trail of these daily review functions. Without documentation that this control takes place daily, there can be no reasonable assurance that markdowns were granted only where appropriate.

Conclusion

DLC implemented many important changes to its Point of Sale system in FY 2010 that have significantly enhanced internal controls and customer service. However, our audit disclosed that weaknesses still exist and controls need to be strengthened further. We believe that the recommendations described below will provide DLC an effective means of addressing the issues outlined in this report.

Recommendations

We are making fifteen recommendations to improve internal controls at DLC, some of which may require coordination with other County Departments as noted. Accordingly, we recommend that the Director of DLC should:

1. Designate a security administrator within DLC to define the Department's comprehensive information security program and to oversee the implementation of the program with the objective of achieving PCI compliance in a COBIT/COSO based environment.
2. Implement formal change management policies and procedures for DLC.
3. Implement more rigorous problem tracking tools to ensure proper approvals, documentation and timely follow-ups of any issues and tasks that support business needs.
4. Document the review of the daily Marked Down Report, currently conducted by the Retail Operations Department.
5. Implement and document a data restoration testing program. Testing should be conducted at least quarterly with results documented and shared with DLC management.
6. Implement processes for periodic testing of the Disaster Recovery Plan to be conducted at least annually with results documented and shared with management.

7. When selecting a Warehouse Management System, use a formal documented systems development methodology that includes defining functional and technical requirements and evaluating any potential systems against these requirements as well as life cycle cost.
8. Utilize a more rigorous project management methodology for future system implementation projects, including the implementation of a new Warehouse Management System. The methodology should track functional and technical requirements throughout the project and it should include user acceptance testing and implementation so that there is a complete audit trail of the project's rollout.
9. Review the technical skills of the DLC staff versus the skill levels required, prior to commencement of the warehouse management system implementation, in order to assure that proper skill levels are present in the staff to support another real-time client/server based application.
10. Implement improvements to the IT training program including documentation of new employee training, an IT employee training plan based upon individual employee needs, and a performance measurement capability to monitor employee performance based upon the training provided.
11. Conduct and document periodic due diligence reviews of the vendors Shift4 and Elavon using SSAE16 (previously SAS 70) reports, if they are available and suitable, or other means. Although PCI Compliance reports exist for Shift4 and Elavon, these focus on the security of credit card processing only. A SSAE16 report would encompass a more comprehensive review of the service provider's system of internal control, as well as define the user controls that DLC should have in place.
12. Work with the Directors of DGS and DTS to consider whether to develop formal agreements between the three departments on critical DLC service needs not currently covered by agreements. Such agreements, if implemented, should define roles and responsibilities for all parties, as well as quantifiable and measurable levels and timing of critical services.
13. Conduct a periodic review of the IT equipment inventory list provided by the vendor IBM to ensure the list is up to date and also to ensure that IBM provides services in accordance with the contract between DLC and IBM.
14. Work with the Director of Finance to set in place a specific plan and target date for bringing Finance's reconciliation of the DLC PNC Bank reconciliation certification process up to date.
15. Conduct periodic inventories of the DLC Warehouse more frequently than the current annual frequency based upon management's perspective of the optimum timing and methodology. Also conduct unannounced, periodic, random testing of inventory segments during the year.

Department Comments

We provided DLC, Finance, DGS, and DTS with a draft of this report for review and comment. Finance offered minor editorial comments which we considered; DGS and DTS had no comments. The Director of DLC responded in a June 21, 2011 letter to the Office of Internal Audit. The Director stated that he was very pleased with the execution of the POS contract as well the performance of DLC team members and the positive feedback that DLC received from retail staff and customers. Concerning the findings in this report, the Director stated he concurred with them. We have incorporated the Director's letter into this report at Appendix C.

Appendix A –Key Drivers for Implementation from DLC RFP

Key Driver	Pre Implementation Status	Post Implementation Status
1. Ability to accommodate organizational change	Under the old POS system the DLC could only support 24 stores. When the 25 th store was added the DLC had to acquire a new POS system and thus support two different systems. Furthermore, under the old system the DLC was limited as to information storage space. Periodically it was necessary to purge servers of data and reorganize the files. This required a certain amount of down-time for the stores and also limited the amount of history information that was available since the oldest data was always purged first.	An unlimited number of stores can be supported by the new system and there is unlimited storage space so there is no reason to purge history unless the DLC wants to.
2. Need for a Commercial Off-the-Shelf (COTS) POS System	The old POS system was installed in November 1999. The vendor went into bankruptcy in 2003 after which time there was no support and no updates to the system. The Department of Liquor Control (the DLC) was required to expend programming effort in order to accommodate certain regulatory requirements, particularly PCI requirements regarding credit card processing. For example, the DLC had to address the need to only print partial credit card numbers on receipts as opposed to full credit card numbers. The DLC was required to change to new terminals and software and change business processes in order to accommodate the new regulations regarding the security of credit card numbers. Furthermore, the DLC had to do manual reconciliation of credit card sales at the end of each day.	Under the new system the DLC receives regular updates and have full maintenance and support from the vendor. Regulatory compliance changes are provided as a part of the maintenance and update services. Furthermore, the DLC is no longer required to provide a manual credit card sale reconciliation process at the end of each day. The reconciliation process is automated.
3. Flexibility and integration of the POS system with current and future WMS	Under the old system there was an interface between the Warehouse Management System and POS, but it was limited to basic data about products and sales and was always at least 24-hours behind.	Under the new system the DLC can get more inventory related information, including information about licensee’s customers’ shopping habits and sales statistics about various brands and products. Furthermore, inventories are updated in near real-time, which means that the inventory information is never more than one-hour behind.

Key Driver	Pre Implementation Status	Post Implementation Status
4. Account security management	The old system had very little control over user access. Shared accounts were used to define generic users and the audit trail available for problem research was limited to manual review of transactions.	Under the new system each user has a unique identifiable ID. There is an audit trail ability which is automated. Furthermore, a user is authenticated each time that he or she logs on to a register and his or her initials are recorded on each receipt. Users who are floaters are identified by a unique ID just like users who are assigned to a specific store. A second drawer is available on each register so that two users can be logged on to the same register at the same time. Users are automatically logged off a register after 15 minutes of inactivity.
5. Tight inventory control	The old system had very little flexibility in its reporting of inventory activity. It merely recorded “ins” and “outs” of product. It had no negative inventory reporting capability other than visual checks and it had no ad-hoc reporting capability.	Under the new system there are advanced reporting capabilities that includes aging of inventories and reports of over-stocking. Furthermore, the DLC has a negative inventory report, which raises a red flag whenever a certain inventory of a certain item becomes negative. There is an ad-hoc report writing system that allows users to create reports of queries based upon specific problems and needs at specific times.
6. Enhanced access to information	The old system reporting was based upon batch processing, which meant that information was processed over-night and delivered to the users in paper form the next day.	The new system is client/server oriented, has ad-hoc reporting capabilities and provides information to users on demand.
7. Creating a close-to-paperless environment	<ul style="list-style-type: none"> • On the old system before a user could place an order it was necessary to print out an order book. Typically one store would run two to three order books per week and each book was 50 to 60 pages. • Under the old system there was no way for personnel at one store to look at the inventory at the other store; consequently every week the DLC would print out an inventory of all stores and send it to all stores. • Under the old system two receipts were produced for every credit card transaction. One receipt came from the POS device and the other came from the register. The two receipts had to be stapled together by the clerk. 	<ul style="list-style-type: none"> • Ordering of product is done 100% on line. No order books are required. • In the new system the inventory of every store is available to every user in near real-time. • Under the new system, one receipt is produced for each credit card transaction.
8. Increased access to real-time data	Under the old system customers had no access to store inventory data and income data was not available on-line.	Under the new system inventory data for each store is available to customers on the DLC web site and income data is available to authorized users. Authorized users also have remote access to data

Key Driver	Pre Implementation Status	Post Implementation Status
		when business need requires it.
9. Enhanced data sharing between stores, and between stores and WMS	Under the old system no information was available about licensee purchases.	Under the new system licensee purchases at any store for a given period of time are available, thus the usage profile of licensees is available at all stores.
10. Ease of use at all levels	The old system was entirely keyboard driven. There was a very limited search ability to access the database. Manual reconciliations of credit card transactions were performed daily. The customer did not see what line items were being rung up on the sale and access was only limited to the specific store from which access was attempted.	Under the new system touch-screen access capability and mouse capability is available in addition to keyboarding. Search options are only limited by the user's imagination. Daily credit card reconciliation is automated. The customer views what is being rung up as it is being rung up and all store inventories are available to every store.
11. Ability to generate daily/the weekly/monthly/quarterly/annual and ad-hoc reports and statements efficiently and in a timely manner	Under the old system all reports were processed in "batch mode" by way of daily/weekly /monthly/quarterly/annual schedules and delivered to stores on a next-day basis.	Under the current system all data is available on-line at all times.
12. Ability to implement a gift card program	The old system had no ability to support gift cards.	The ability to support gift cards is available under the new system. This ability is not in production now but is scheduled for implementation early in the fourth quarter of 2011. Approval for this implementation is awaiting a contract amendment with our credit card processing vendor Elavon.
13. Ability to integrate with a check verification provider	The old system had no on-line check verification capability.	The ability to support check verification is available under the new system. This ability is not in production now but is scheduled for implementation early in the fourth quarter of 2011. Approval for this implementation is awaiting a contract amendment with our credit card processing vendor Elavon.
14. Ability to validate age with driver licenses using electronic methods	Under the old system clerks were required to visually examine driver's licenses in order to determine a customer's age.	Under the new system a driver's license is scanned and a customer's age information is visually displayed to the clerk.
15. Need for an end-to-end fully PCI Compliance POS solution	The old system was not PCI compliant in any aspect.	The new system is PCI compliant with regard to the storage of credit card data and has been reviewed for PCI compliance in other areas. Action items to achieve full PCI compliance are pending.

Appendix B – Detail of Fourteen Customization Descriptions from Contract with Systems Technology Group (STG)

- 2.2.4.1 Centrally Managed Cashiers** - Contractor must provide a plug-in or customization that allows centralized user account management through Microsoft Dynamics RMS HQ. Centralized account management must provide the following functionality: creating, deleting, and modifying user accounts; modifying passwords; creating, deleting, and modifying groups; assigning security permissions to user accounts and groups, assigning users accounts to groups.
- 2.2.4.2 Cashier Auto Logoff** - Contractor must provide a plug-in or customization that automatically logs users off the POS registers after a pre-defined and modifiable period of time when the system is idle.
- 2.2.4.3 Cashier Ability to Select Drawer Upon Login** - Contractor must provide a plug-in or customization so that when each cashier logs in each day, they are prompted to choose which drawer to use for that day (of the available drawers); there is no pre-assignment of cash drawers to employees.
- 2.2.4.4 Order Book/Order Entry** Contractor must provide a plug-in or customization that allows users to specify reporting for three (3) user-defined periods by date range (for example FROM: MM/DD/YYYY TO: MM/DD/YYYY) for user-defined categories of items to assist users in calculating needed quantities, and to allow users to order products for the next order cycle. The end user must easily be able to enter the desired item quantities for the requisition within this screen. Order book/worksheet must show users the current quantity on hand of each item, plus three user-defined periods of sales (all on one line of the worksheet page). For example, for a regular stock order, user might choose three one-week periods; for a special order (SC) book, user might choose three one-month periods. Order book displays item data that the user is able to sort (for example, by class category). User may enter quantity desired directly on screen while viewing each line item. User may submit entire order when finished entering quantities onto worksheet. User may save and return to add, delete or change quantities any number of times until the order is submitted.
- 2.2.4.5 Redesign and Simplify Store Transfer Routine** - Contractor must provide a plug-in or customization that reduces the amount of steps required for store transfers from the baseline product, and that automatically assigns a transaction number to each transfer. For example, the current process requires seven steps to proceed to the item entry screen; the customization should reduce the number of steps approximately by half, for a more user-friendly process.
- 2.2.4.6 Consolidate “Like Items” on a Receipt** - Contractor must provide a plug-in or customization that consolidates “like” items on a receipt, as outlined in Functional Requirement FD7 of the RFP.
- 2.2.4.7 Escrow Account No Limit Charges** - A plug-in or customization that differentiates between Escrow and Cash wholesale customers, enables Escrow customers to purchase against their Escrow Account and block cash customers from purchasing without paying. Further, the County’s System Administrator must be able to block all accounts from purchasing, and limit and change payment options. The POS system must communicate sales to the County’s Warehouse Management System (WMS) in detail (store, customer name, customer number, type of customer, purchases, amount of sale, amount paid, date and time of sale, etc.), and the information must directly feed into the Customer’s account. The POS system will not track customers’ balances. Responsibility of the Contractor is limited to passing the detailed information directly to the WMS.

2.2.4.8 Monthly, Weekly, and 8% Discount Sales to Retail Customers - Contractor must provide a plug-in or customization that allows for sales/promotions functionality as described in the RFP Functional Requirements, notwithstanding its being noted as “needing customization” in the Contractor’s bid response, as well as streamlining the process of programming large quantities of items for monthly and weekly sales:

- For retail customers (license facility sales do not receive a case discount) the Contractor’s system must automatically convert pricing to give a case discount (currently 8%) once a case-equivalent threshold is reached. While bottle size is the typical indicator of how much an item counts toward a case equivalent (for example, a 750ml or Litre would contribute 1/12th to the total; a 1.75L or 1.5L would contribute 1/6th to the total), consideration must be given to items packaged in non-standard case units (for example, some 750ml wines are packaged as 6 per case). The current system uses a multiplier of 120, where an item packaged at 12 bottles per case contributes 10 to reach the threshold of 120; an item packaged at 24 bottles per case contributes five (5) to reach the threshold of 120. The multiplier must automatically be assigned to an item’s record based on information contained in the inventory file (i.e., the multiplier is not calculated and entered manually by the person creating the inventory file for that item).
- Items currently discounted (on sale) do not contribute toward the case discount threshold.
- Items currently discounted (on sale) do not receive further
 - Discount when other items in the sale have reached the threshold for the case discount.
 - The System must allow temporary price reductions (sale pricing) for user-specified periods of time on individual items, programmed at the POS central management system, with the following functionality:
 - sale pricing data for specified sale periods is pushed to stores by user (not automatically)
 - after programming item(s), sale pricing records for individual items may be deleted
 - after programming item(s), sale pricing records for individual items may be modified for new date range
 - after programming item(s), sale pricing records for individual items may be modified for new sale price

2.2.4.9 Display Total Number of Items Sold on Screen and Receipt - Contractor must provide a plug-in or customization that allows the total quantity of items sold to be displayed both on the POS screen and the receipt. On screen, the quantity sold must be calculated as every item is scanned, so that cashier can reconcile the number of items sold at any time throughout the sale. On the receipt, total quantity sold must reflect all bottles sold in the sale.

2.2.4.10 Display Regular Price, Discount and Discounted (Sale) Price on Screen and Print on Receipt – Contractor must provide a plug-in or customization that displays the regular price, the discounted (sale) price if applicable, and the discount if applicable, both on the screen and printed on the receipt. On screen, the regular price and any sale price must both display on the same user screen, visible to the clerk and/or the customer.

2.2.4.11 Age Verification to Show Date of Birth (DOB) and Age on Screen and Receipt - Contractor must provide a plug-in or customization that allows the age verification component to display the date of birth and age on the screen, and print on the receipt wording such as “Age verified by license; over 21” if a license is swiped during a sale and the calculated age is over 21.

2.2.4.11 Age Verification to Show Date of Birth (DOB) and Age on Screen and Receipt - Contractor must provide a plug-in or customization that allows the age verification component to display the

date of birth and age on the screen, and print on the receipt wording such as “Age verified by license; over 21” if a license is swiped during a sale and the calculated age is over 21.

- 2.2.4.12 Item Return by Selection from a Receipt** – Contractor must provide a plug-in or customization that enables the clerk to return a single item or select items from a receipt that includes multiple items, instead of the alternative of automatically returning all items on the receipt and then selling back the unreturned items to the customer.
- 2.2.4.13 Microsoft Dynamics RMS/Shift4 Integration-** Contractor must provide a plug-in or customization to ensure successful integration of the Contractor-proposed Shift4 Secure Payment Processing Credit Card Authorization Software (or other mutually-agreed upon Software that provides a PCI-compliant solution for credit card transactions) with the POS Microsoft Dynamics RMS system. In addition, the Shift4 plug-in or customization must integrate with the County’s current credit card acquirer, Elavon.
- 2.2.4.14 Importing and Exporting Data from and to the Warehouse Management System (WMS)-** Contractor must provide a plug-in or customization that enables data to be imported and exported between the POS and WMS as defined in technical requirements TE1-TE18 in the RFP (Attachment I, Technical Requirements of the RFP).

Appendix C – Department of Liquor Control Formal Comments Memorandum



DEPARTMENT OF LIQUOR CONTROL

Isiah Leggett
County Executive

George F. Griffin
Director

MEMORANDUM

June 21, 2011

TO: Larry Dyckman, Manager
Office of Internal Audit

FROM: George F. Griffin, Director
Department of Liquor Control

SUBJECT: Formal Comments on the Report of the DLC Point of Sale System

Overall, I am very pleased with the execution of this contract, performance of my team and the positive feedback we have received from retail staff and our retail customers.

Positive aspects stated in the audit:

- DLC has significantly improved the accuracy, timeliness, internal control, and customer service of the POS
- Implementation of the POS system, including all fourteen customizations, was executed successfully
- DLC met the essential goal of implementing all stores well in advance of the 2010 holiday season
- When amendments were necessary (six signed so far), DLC followed appropriate change management processes
- The new system has increased functionality including real-time inventory, availability of reporting, and superior system availability, all of which has improved customer service compared to the prior system
- Controls were properly designed and implemented to ensure accuracy, validity, and completeness of data converted from the old POS system to the new POS system
- Based on interview results, store managers view the new system favorably
- Adequate balance and control processes are in place within DLC for the posting of cash, checks, credit card transactions, and escrow transactions
- DLC has appropriately designated the DTS Data Center as the host facility for its servers

Summary:

I concur with the findings of the report.