Contracts Audit January 2011 Recommendations Status of Recommendations

Internal Audit Observation	Internal Audit Recommendation	Management Response	Management Action Plan	Responsible Party	Due Date
PASS account adjustments over \$200 and commercial E-PASS account adjustments in excess of \$500 must be approved by an ACS manager in	Supervisor passwords, rather than PINs, to approve adjustment transactions in TRIMS (passwords are required to be changed on a regular basis by the system).			Rene Rodrigue, Director of IT David Wynne, Director of Toll Operations	Original: 12/31/13 Revised: 12/31/15 Revised: 3/31/16

DRAFT

Toll Violations Audit March 2012 Recommendations Status of Recommendations

Internal Audit Observation	Internal Audit Recommendation	Management Response	Management Action Plan	Responsible Party	Due Date
6. Process Improvement: There is no process to pursue collections for habitually delinquent toll violators that exceed a certain number of transactions or a certain dollar threshold. Enhancing collection efforts could increase collection rates and associated revenue.	Management should determine if it is cost beneficial and within the business objectives of the Authority to turn over delinquent violators to a collection agency. The Authority should consider if the UTC is outstanding with the court. Additionally, the Authority should implement a policy containing a time and dollar threshold of how long a UTN or UTC violator should be outstanding before the Authority pursues collections, as well as, a dollar amount the UTN or UTC must reach prior to sending it to collections.	Concur	Director of Toll Operations will facilitate a review of potential revenue to be collected, possible collection rates, industry practices, legal ramifications and consideration of community perception.	David Wynne, Director of Toll Operations	Original: 1/1/13 Revised: 3/31/13 Revised: 1/1/14 Revised: 12/31/15

Toll Revenue Audit March 2013 Recommendations Status of Recommendations

Internal Audit Observation	Internal Audit Recommendation	Management Response	Management Action Plan	Responsible Party	Due Date
of this appears to be the manual nature of the Attendant's Shift Record used as a reconciling item during toll collections audits, for which third	b) The Authority should also consider automating certain aspects of the Attendant's Shift Record log by integrating the unusual occurrence, violations, and insufficient fund transactions within the MLT system. This would reduce the subjectivity of the FTS auditor's interpretation of the manual ASR log.	Concur	The Authority currently has this recommendation as a function in the planned Toll System Replacement project that is currently ongoing at this time. The Authority would expect to have the new system in place and operating by July 1, 2015.		Original: 7/1/15 Revised: 4/30/16 Revised: 12/31/17

Intelligent Transportation Systems Security Review February 2015 Recommendations Status of Recommendations

Internal Audit Observation	Internal Audit Recommendation	Management Response	Responsible Party	Due Date
1. Generic Key Access to Roadside Cabinets: A common key is used to lock the roadside cabinets that house ITS network equipment. There are over 300 roadside cabinets in the ITS environment, each containing computer equipment that supports the digital message boards, cameras, RFID readers and other ITS roadside equipment. These cabinets are accessed by ITS contractors and ITS staff to install, troubleshoot, and repair issues on the ITS network. This common key (termed "universal #2 key") used to lock the ITS roadside cabinets is also used by FDOT, CalTrans, and other state organizations. Potentially unauthorized access could be gained to the roadside cabinets because of the wide usage of the universal #2 keys that are used to lock them. Additionally, once these cabinets are unlocked, the computer equipment that supports the digital message boards and RFID readers can be accessed, as well as the rest of the ITS internal network. This, coupled with the risk described in Observation #2 of this report, could allow unwanted changes to the message boards that project travel times, and could allow Denial of Service attacks on the traffic pattern equipment in the environment. Also, because the universal #2 key is not assigned to a single person (but is given to anyone who needs to perform work on equipment in the cabinets), administrators may not be able to assign accountability to the person opening a roadside cabinet. Additionally, ITS cannot grant access to specific cabinets based on the work that is to be performed. This does not follow the principle of least privilege, in which a person is granted access to only those systems required based on their job duties.	ITS to grant access to only those cabinets necessary (not all cabinets in the environment), and should be unique to the ITS environment.	Though ITS is not aware of unauthorized access occurring, we recognize the risk of utilizing a generic key. ITS will develop a plan to implement a five year project to address the risk of unauthorized access to the cabinets due to the use of a generic key. Update July 21, 2015: Cyberlock will be installed as part of project 599-525. Estimated completion date is December 31, 2016.	Corey Quinn	12/31/16

used on the digital message board controllers that give travelers an estimated time of arrival while travelling, as well as the RFID controllers that receive signals from E-pass or Sun-pass devices	are changed at least every 90 days.	ITS will change the default credentials on the digital message board controllers where possible (the credentials are hard-coded in some models, and therefore cannot be changed). We will research the feasibility of changing these credentials every quarter, in addition to relying on our response outlined in Observation #1 (Devices that do not have remote password modification capabilities from the manufacturer must rely on the response outlined in Observation #1), and detective controls surrounding the cabinets. Update July 21, 2015: Where possible, RADIUS authentication technology will be used to subsume authentication under the normal CFX password requirements. Where RADIUS cannot be used due to functionality limitations, passwords will be rotated twice a year beginning November 2015.	Corey Quinn	11/30/15
4. Documented Policies and Procedures: Though ITS leverages CFX policies and procedures where possible, defined policies, procedures, and roles and responsibilities are not documented for operations specific to ITS, such as procedures for adding and removing user access and the incident response process. While there is very little change of users in the ITS environment, the process should be documented to prevent loss of knowledge should an ITS employee or long-term contractor leave the organization. Without strong governance over standard practices throughout the environment, current activities may not outline Management's current expectations.	policies are reviewed at least annually to ensure each policy is still relevant.	ITS is currently creating a document outlining formalized security procedures to be implemented in the environment. The processes outline above will be included in this document. Additionally, ITS will work with CFX to determine a clear delineation of responsibility between the environments to ensure all processes at ITS, including those listed above, are formally documented. Update July 21, 2015: Development is complete, review to be completed by September 1, 2015.	Corey Quinn	9/1/15

6. Outdated Software: 44 applications utilized on 373 of the 1627 systems scanned have vulnerabilities that could lead to compromise due to missing patches or upgrades. The vulnerabilities in these applications could allow for denial of service attacks, arbitrary code execution, information disclosure, or authentication bypass. Each of these attacks affects the confidentiality, integrity or availability of the applications listed above, which may cause difficulties when conducting normal business operations or system and application maintenance. A listing of these vulnerabilities has been provided to ITS in a separate document.	from their vendors. Analyze their business use, and remove them should they be deemed unnecessary. Develop and deploy a formal vulnerability management process that includes periodic vulnerability scans to allow for the identification and application of all updates to systems which do not have the most recent patch level.	to refine a process to keep these updated (currently, ITS systems do not have Internet access, and as such, updating these applications would require CFX's involvement and a manual process). Update July 21, 2015: Software update or removal will be completed by February 28, 2016.	Corey Quinn	2/28/16
7. Log Configuration: System and database logs within the ITS network are not secured, managed, correlated, or alerted upon. System, Application, and Security log configurations within the network remains at the default settings for systems, and are not moved off the system to a log aggregation tool. As a result, these logs will be lost after the default log size limit of 20 megabytes is reached, preventing ITS from performing investigative actions with these logs. Depending on the activity on the system, the default log size could be filled within a few days. Without centralizing, securing, correlating, and alerting upon all types of logs in the environment, unwanted, and potentially disruptive, actions may occur in the environment without management's knowledge. Logs which are not kept may limit ITS' ability to perform investigative actions.	protected. Review these logs periodically to identify actions within the environment which are unwanted or unauthorized.	ITS will research the feasibility of including this functionality into the current logging system "What'sup Gold". Update July 21, 2015: Research complete. Implementation of Secure Information and Event Management solution pending upcoming organizational changes.	Corey Quinn	6/30/15

8. System Hardening: Procedures to enforce secure system configurations such as removing unnecessary services, disabling open shares, and other configuration weaknesses listed below have not been performed on 93 of the 1627 systems assessed during this project. System hardening is the process of identifying and remediating weaknesses in system configurations to prevent the possibility of compromise due to those weaknesses. The vulnerabilities in these configurations could allow for eavesdropping or impersonation attacks, information disclosure, or authentication bypass. Each of these attacks affects the confidentiality, integrity or availability of the applications listed above, potentially placing ITS' business processes and / or data at risk. A listing of these vulnerabilities has been provided to ITS in a separate document.	checklist format to be included in the current build guidelines for all systems. Modify the configuration settings on the above noted systems to ensure they are hardened against attack. The National Institute of Standards and Technologies (NIST) publication on server security is an industry standard regarding	ITS will research the feasibility of removing the functionality outlined above, and include system hardening in the "ITS security procedure" document. Update July 21, 2015: Reconfiguration or removal to be completed by March 31, 2016 pending upcoming organizational changes.	Corey Quinn	3/31/16
Protocol), Telnet, and rlogin are utilized on 1131 of the 1627 systems scanned within the ITS environment. They require a user to enter a username and password for authentication to the remote system. This username and password and all other data are transferred between the client and server without encryption on the network. Since the username and password are unencrypted while on the network, there is a possibility that an	Additionally, because Rlogin can be configured to allow users to login without providing a password, ITS and CFX should review the deployment of Rlogin on all systems in the environment to ensure that this service is not configured in this manner.	functionality outlined above, and include disabling insecure services in the "ITS security procedure" document (assuming this functionality is not needed). Update July 21, 2015: Research complete. Documented business justification for necessary clear text protocols will be added to the security manual, and the remaining items will be removed by April 30, 2016.	Corey Quinn	4/30/16

10. Default SNMP Strings: The default SNMP community string is utilized on 1538 of the 1627 systems scanned within the ITS network. SNMP utilizes community strings as a form of password to read and write to many types of network devices, appliances, switches, routers and firewalls. An attacker who is able to obtain either the SNMP read string or SNMP write string can view or modify the configuration of critical network devices. This could result in compromise of sensitive data through interception, modification of devices to allow additional malicious traffic through the network, or interruption of legitimate business processes. A listing of these vulnerabilities has been provided to ITS in a separate document.	from the default values to avoid the possibility of unwanted information leakage or configuration changes. Additionally, disable legacy versions of SNMP (Versions 1 and 2), and utilize	ITS will develop a plan to modify the default SNMP strings in the environment. Update July 21, 2015: Research complete. Documented business justification for necessary SNMP strings will be added to the security manual, and the remaining items will be removed by July 31, 2016.	Corey Quinn	7/31/16
 11. Dual-Factor Authentication: ITS users are not required to utilize dual-factor authentication for connecting remotely to the network. Dual-factor authentication within the environment is controlled by the CFX IT staff, and currently, only CFX employees are required to connect remotely using dual-factor authentication. Dual-factor authentication requires two (2) of these three (3) items to verify the identity of the user attempting to gain access to the network: Something a user knows (a password) Something a user has (a token) Something a user is (biometrics) Without dual-factor authentication, the compromise of a password can potentially lead to the compromise of sensitive data due to the lack of an additional requirement to authenticate. 		ITS will discuss adding contractors and those who need to connect to the ITS environment through the CFX technology with the CFX IT group. Update July 21, 2015: ITS will deploy trial with Atkins personnel to test the impact to personnel responsible for provisioning accounts by August 31, 2015.	Corey Quinn	8/31/15
the vulnerabilities has been provided in a separate document.			Corey Quinn	10/31/15

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13. Web Server Configuration Weaknesses: Two (2) web servers	The Trace / Track method should be disabled or disallowed on	The system contractor (who administers this system)		
of the 1627 systems scanned within the environment has HTTP	identified web servers. Additionally, the PUT and/or DELETE	will be asked to research the feasibility of disabling this		
Trace and Track methods enabled. These features are installed		functionality when it is not being used, or find other		
to assist developers in debugging web page programming and	servers. ITS and CFX should also consider applying the principle	functionality with less risk.		
are not necessary on production servers. A listing of these web	of least privileges to these servers and remove all unnecessary			
servers has been provided in a separate document.	HTTP Methods, unless there is a business critical need.			
Servers supporting this method are subject to cross-site-scripting				
attacks, dubbed XST for 'Cross-Site-Tracing', when used in			Corey Quinn	12/31/15
conjunction with various weaknesses in browsers. Although			corey Quiiii	12/31/13
difficult to exploit, an unauthorized user may use this flaw to trick				
legitimate web users into giving them their credentials.				
Security vulnerabilities are often identified in unnecessary server				
functionality that is enabled.				

Back Office Customer Call Center Review May 2015 Recommendations Status of Recommendations

Internal Audit Observation	Internal Audit Recommendation	Management Response	Management Action Plan	Responsible Party	Due Date
The call center has a target Average speed of Answer (ASA) of 60	The Authority should consider making changes to the call center agent scheduling to leverage		The Authority will utilize the recommended		
seconds. Currently the call center's ASA is approximately 128 seconds,	part-time staff and improve agent utilization to increase agent availability and lower average		ccModelerprogram to analyze the leverage		
which is consistent across all call types and skills. There are several	speed of answer to the call center's target of 60 seconds. There are several inexpensive staffing		call center resources more effectively and		
factor that play a role in the prolonged ASAtimes. Call center agents	tools that can be utilized to effectively manage the call center schedule, such as ccModeler.		increase agent availability. The Authority will		
spend approximately 50% of their time handling inbound calls while			also adjust the After-Call-Work (ACW) timeto		
30% of agent time is spent in various auxiliarystates, including After-	The Authority and third party vendor should also consider performing additional analysis into the		15 seconds.	David Wynne,	
Call-Work (ACW), which represents about 50% of agent auxiliary time	factors that drive the ACW time to determine if the ACW time can be reduced in an effort to			Director of Toll	
on average.	improve agent availability and improve the ASA. The analysis should include an evaluation of the	Concur		Operations, and	6/30/15
	actual time utilized to capture call servicing notations and other information after the call has			Joann Chizlett,	
The Authority's Avaya AutomaticCall Distribution ("ACD")	ended, and evaluate the extent to which these activities are utilized to service customers or			former Director of IT	
systemisprogrammed to provide an automatic 20secondsof ACW at	improve the efficiency of future calls.				
the end of each call for the call center agent to complete servicing the					
call, make notation on the customer's account, etc. The industry					
average ACW is between 12-15 seconds. Based on the 400 calls					
observed, there is not a great deal of after-call work activity					

Each inbound call to the call center routes the customer to the Intelligent Voice Response ("IVR") system from which the customer selects service options from a prompt. The customer is then routed to the Vector Steps, which provides additional messaging and routes the call to an available call center agent. Within the IVR and Vector steps the following inconsistencies and duplicative information are delivered to the customer, which if corrected, could improve the overall customer call experience: 1. The call prompts utilize a mix of different male and female voices leading to an abrupt and inconsistent customer experience. 2. The inter-prompt and queue treatment consists of a mixed use of silence, ringing, messaging, and music while the customer is on-hold and as the customer transitions from one vector step to another. 3. E-PASS main menu has redundant options to "return to main menu" and "repeat options". The menu also allows callers to opt out to a customer service representative using option "0" which may lead to prolonged call handling times. 4. Hours of operation and locations are given to callers even though the center is open. This information would normally only be presented after-hours. 5. The center does not leverage Estimated Wait Time ("EWT") prompting to inform callers of wait times and potentially redirect callers to online servicing.	conduct a thorough evaluation of vector programming and IVR prompting during the implementation of the centralized back office contact center IVR platform to ensure consistent treatment and the use of EWT to inform callers of high wait times and reinforce the use of online or other servicing options.	Concur	The Authority is in the process of procuring and implementing a new IVR system for E-PASS which will include back-up hardware, and the improvement recommendations will be taken to into account at that time. In addition, the Authority will provide the recommendations to the centralized back office contact center vendor for consideration during the development of any IVR technology, if the Authority were to agree to move forward with the centralized back office contact center.	Rene Rodrigue, Director of IT	6/30/16
The Avaya Phone system can provide reporting that would allow the Authority and the third party vendor to monitor the overall customer service experience and the effectiveness and efficiency of the call center operations. Currently, the Authority utilizes reports to assess the key metrics listed below. However, the Authority does not routinely monitor reporting that would give insight into the underlying factors that drive key metrics in order to achieve performance targets.	The Authority should use detailed reporting to more accurately measure and assess performance factors that drive key statistics. Internal Audit has partnered with the Authority to develop many of these reports as a part of this review. The Authority should use the reports to develop process improvements to improve the call center's operations and achieve the performance targets. Specific reports that should be leveraged include agent attendance and agent aux reports.	Concur	The Authority will track daily, weekly and monthly service level data to assess and improve the performance targets. Service Level is currently set at 80% and will be modified accordingly.	David Wynne, Director of Toll Operations	6/1/15

Aligning call quality attributes to a standardized call flow process enables an organization to assess, measure and address specific behaviors that are aligned to call handling performance objectives, such as call handle time and use of ACW. The standard segments of a call flow include Greeting, Caller Identification, Caller Validation, Service identification, Service Delivery and Wrap up. The Authority's call center quality assurance program is aligned to measure quality in a generalized manner and is not aligned to a standardized call flow. The current call center quality assurance forms are made up of 29 Yes or No questions and 5 additional questions that are measured on a gradient of 1-3. The form does not include "automatic fail" questions/responses that would indicate the need for immediate re-training. As a leading quality assurance practice, all questions should be measured on a gradient whenever feasible. Aligning the quality form to a standardized call flow enables the use of gradients more easily because it allows the behaviors measured to be compared against a specific business process and related goals.	To improve the quality assurance process, the Authority should identify a standardized call flow for the types of calls handled by the call center and identify the specific behaviors and skills that should be measured within each segment of the call. This process would enhance the quality assurance process to allow for specific guidance to CSR's and align quality criteria to measurable business goals and objectives (e.g. reduction of call handle time).		The Authority will work with the third party call center vendor to revise the current quality assurance process to align with the call quality attributes to measure business objectives.	David Wynne, Director of Toll Operations	Original: 7/1/15 Revised: 11/30/15
While the messaging delivered to callers in both the IVR and Vector messaging reminds callers that unpaid toll notices can be paid online, the Authorities web presence could be improved to make the process of making payments online more intuitive. Links to unpaid toll payment options are not plainly visible and require additional navigation that we believe is deterring customers from utilizing the online service and instead placing calls into the center. In addition, throughout the course of the 400 call observations, there were only a handful of calls (fewer than 5) where the agent reminded the caller that purchasing a transponder or replenishing their account would allow them to avoid toll violations in the future. Also, the Authority's corporate phone number is often called when a customer is trying to contact the call center. These calls are received by the Authority's receptionist and transferred to the call center.	The Authority should consider launching an E-PASS product and services website, independent of the corporate website, that would focus on the customer experience and E-PASS activity. An E-PASS focused website would allow customers to navigate the site with ease and would help to deflect customer service activities, such as making unpaid toll notice payment and account replenishments, to the website. Also, call center agent training should also be considered to reinforce the importance of reminding customers to replenish their accounts and/or purchase a transponder in cases where an in-state customer is contacting the authority about a toll violation or citation. These improvements can deflect calls and reduce volume of calls received by the call center. The Authority should also consider adding prompts to the treatment provided on the main number to route callers to the call center in order to limit the number of call center calls received by the receptionist.	Concur	1.The Director of Toll Operation and IT will schedule a meeting with the CFX Communication Department to discuss the recommendations to the website and evaluate which recommendation can be implemented. 2.The call center scripts will be updated to include a reminder to customers to replenish and/or purchase a transponder at the end of each call. 3.The Authority will consider adding prompts to the treatment provided on the main number to route callers to the call center in order to limit the number of call center calls received by the receptionist.	1. David Wynne, Director of Toll Operations, and Joann Chizlett, former Director of IT 2. David Wynne, Director of Toll Operations 3. Joann Chizlett, former Director of IT	1. 8/1/15 2. Original: 6/1/15 Revised: 11/30/15 3. 8/1/15

The majority of calls handled by the Authority are payment related, including payment of Unpaid Pay Notices and Citations and account replenishment. During these calls, agents spend an average of 68 seconds identifying the caller and accessing their account. This represents approximately one-third of the total talk time of the call. A combination of call automation (attempting to identify the caller via the phone number that they are calling from) and agent training to obtain the information required to identify the customer and access their account as efficiently as possible could significantly reduce the handle time of calls.	determine the percentage of inbound calls associated with active customer accounts. Based on results of the analysis, The Authority will determine if it is feasible to incorporate call automation based on strategic direction as it relates to the deployment and CFX involvement in centralized back office contact center. 2. The third party call center vendor will provide refresher training on "Call Control" and incorporate "Call Control" techniques	1. Original: 7/1/15 Revised: 11/30/15 2. Original: 8/1/1/5 Revised: 11/30/15
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