GENFARE CASH AND TICKET CONTROLS AUDIT (19-05)

Terry Follmer, VP of Internal Audit

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EXECUTIVE SUMMARY

As part of our FY2018 -2019 Audit Plan approved by the Capital Metro Board, we performed an audit of the Genfare System to determine whether internal controls are sufficient to prevent and detect errors and/or irregularities in the Genfare System cash and ticket transactions. The last audit of this area was called Treasury and Fare Revenue issued in April 2015 which reviewed all fare systems (e.g bus, paratransit, rail). This year's audit had a more narrow focus with a deeper review of the internal controls related to the Genfare systems cash and ticket controls on buses. The audit results including the objective, scope, and conclusion are as follows.

Background

In 2005, Capital Metro implemented the automated fare collection system called Genfare used on the bus fleet. Genfare is a division of SPX and one of the leaders in the fare collection solutions industry for over 30 years. Each bus is equipped with a Genfare farebox and operator control unit that is located by the bus operator and the farebox collects cash and tracks different fare types. Cap Metro has a total of 423 revenue buses which includes 258 at 2910 Each 5th Street, and 165 buses at 9315 McNeil Road. A bus in revenue service is probed upon entering the yard and the Genfare cashbox inside the farebox is released and vaulted to the mobile Genfare revenue vault. During this probing process, data is transmitted to the central Genfare System containing the bus' revenue, ridership, bill and coin counts, etc. for the day. See Exhibit A and B for a listing of Genfare Assets and how they interact with each other.

The Finance Department is the business owner responsible for the Genfare System and is currently on version 2.05.09. The Finance Department works closely with Bus Operations and IT Departments if data and systems look unusual. Each month the Genfare System collects an average of $400,000 in cash with approximately 1.8 million riders. Each day the Finance Department reconciles the Farebox revenue by comparing the physical treasury cash count to the Bin Removal Report (Genfare cash report) and there have been minimal differences. In addition, there are various Genfare reports that should be monitored in order to understand ridership activity, cash, ticket sales, driver overrides, etc. See Exhibit C for a list of reports available.

Ridership is captured by two different systems through the Automatic Passenger Counter (APC) system and the Genfare System. The APC system uses smart motion sensors to capture each passenger entering/exiting the bus and is considered the most accurate ridership data which is used for NTD reporting. The Genfare ridership data is collected manually based upon data keyed by the bus operator or customer scanning their ticket in the farebox. The Genfare System is subject to human error because it requires human interaction with the Genfare system to record any activity. One of the key functions of the automated APC software is to merge the SmartSensor APC ridership data with GPS, time/date info and is used by the Planning Department in the evaluation of routes, blocks, trips, timepoints, and stops.

Audit Objective & Scope

The primary objective of this audit is to determine whether internal controls are sufficient to prevent and detect errors and/or irregularities in the Genfare System cash and ticket transactions. Additionally, we checked current controls related to the APC System ridership count to see what compensating controls are in place to help validate that the Genfare System and bus operators are properly accounting for all passengers. The audit scope includes review of systems and procedures for the passenger fare collection and processing cycles. It included reviewing Genfare reports, reviews, and documents from for the period of October 2018 through February 2019. We observed the following processes: probing of buses including vaulting of the cashboxes, the treasury process of counting of funds and emptying the bin, QA audits completed, and various Genfare daily summary and security reports. In addition, we compared ridership from automatic passenger count (APC) to Genfare Ridership to identify anomalies within driver, bus and route.

Opinion

The Genfare System is a very sophisticated and mature system with lots of internal control reports focused on cash, tickets and ridership data. We noted that the Finance Department has not established written standard operating procedures (SOP) covering the usage and management of the Genfare system. Internal controls can be improved by establishing SOP and monitoring variances for the following areas:

- Driver Overrides Report not monitored (aka Driver Key Report) by Driver and Route.
- Bypass usage by driver should be monitored because coins received is not counted by Genfare when in bypass mode.
- Variances between Farebox ticket sales plus Single Rides versus Cash collected by Driver/Route.
- Cashbox Key & Inventory of Genfare Assets (e.g. Cashbox, Farebox, Cashbox/Bullet Key, Jumper Key that clears memory, etc.).

Additionally, we believe internal controls can be further strengthened through the following:

- Changing the Cashbox Keys (aka Bullet Keys) and locks at 2910 which have never been changed since the 2005 Genfare implementation, and at North Ops which was last changed in 2012. Although there have been no issues, changing the locks/keys is a proactive action that helps reduce the risk.
- Explore opportunities to reduce operator overrides (see audit issue # 5).
- WIFI transmission from bus to Genfare server for data instead of IR Probe.

In general, developing SOP is one of our primary audit findings. The detailed audit report that follows provides more context and understanding on the audit opinion and recommendations above.

This audit was conducted in accordance with US Government Accountability Office's Generally Accepted Government Auditing Standards (GAGAS) and the Institute of Internal

Auditor's International Standards for the Professional Practice of Internal Auditing. These standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. The audit was conducted by the following staff members in the Capital Metro Internal Audit Department:

- Jeannette Lepe, Internal Auditor II (Project Lead)
- Terry Follmer, VP of Internal Audit

Recommendations to strengthen controls and improve accountability were provided to management. Management agrees with the internal audit recommendations and has provided target completion dates which are included in the detailed audit report below. A follow-up audit is performed semi-annually (i.e. May and November) to ensure management action plans for all issued audit reports are completed timely.

We appreciate the cooperation and assistance provided to us throughout this audit.

Issues & Risk	Recommendation	Management Action Plan
1. DRIVER OVERRIDES & BYPASS NOT MONITORED The Bus Operators have the ability to issue override passes in the Farebox System for a variety of reasons (e.g. discounted fares, free fares, change fare type, etc.). The Genfare system has special keys the Operator hits to capture the reason for the overrides, but there is no process in place to monitor usage by driver and route. We reviewed the Override Report (aka Driver Key Report) and noted the number of overrides varied greatly for some bus operators but no one was monitoring or investigating. Bus operators with higher override rates can be an indicator of many type of problems (e.g. improper training, fare evasion, ticket fraud, Genfare System issues, etc.), however these issues will not be prevented and detected unless someone is monitoring. Similarly, we noted that the Bypass Report is not being monitored. Depending on the circumstances, sometimes the situation will need to be given to Bus Operations to investigate.	The Controller and VP of Bus Operations should consider the following: a) Developing written standard operating procedures (SOP) covering the monitoring of overrides and bypass. b) The SOP should state the cadence as to how often the override and bypass review is performed as well as establish tolerance levels to identify outliers. c) Overrides outside of tolerance levels or that look suspicious should be reported to Bus Operations Department. Their investigation results should be reported back to Finance together with any action plans to remediate.	Management agrees with the recommendation and will remedy this issue. **Target Completion Date**: June 30, 2019

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Issues & Risk	Recommendation	Management Action Plan
2. COMPARE GENFARE TICKET SALES TO CASH The Genfare System counts the cash collected on each bus and Finance reconciles this daily to the physical cash count performed by Treasury. While this process is working well with very low variances, we noted that the monthly reconciliation for Tickets sold to cash was not calculating the maximum potential cash collection possible based on transactions captured by the Farebox. Under the current reconciliation process all day pass overrides are not being accounted for. Such an analysis will identify collection rate by driver and route, however this analysis is not currently being performed. Monitoring this variance by driver and route will help in preventing and detecting issues such as improper training, fare evasion, ticket fraud, Genfare System issues, etc.	The Controller and Manager of Revenue should consider the following: a) Developing written standard operating procedures (SOP) covering the reconciliation and variance analysis related to farebox tickets and cash. b) The SOP should state the cadence as to how often the review is performed as well as establish tolerance levels to identify outliers. c) Ticket to cash variances outside tolerance levels are researched with action plans to remediate as applicable.	Management agrees with the recommendation and will remedy this issue. A ticket to cash reconciliation method will need to be developed **Target Completion Date**: September 30, 2019

Issues & Risk	Recommendation	Management Action Plan
3. CASHBOX KEY & INVENTORY OF GENFARE ASSETS The Cashbox is a solid metal box that has one door which can only be opened using a Cashbox Key (aka Bullet Key). Audit identified that cashboxes are not physically inventoried, and cashboxes may be rebuilt by maintenance, elevating a level of risk in the Genfare System as the system may erroneously create a cashbox number. During our audit, a cashbox changed its number in the GFI system four different times, and it took a total of two days to find the error. Additionally, our review of the cashboxes identified that the serial numbers engraved on the handle has worn off on some cashboxes and is not legible. Furthermore, we identified two cashboxes whereby the serial number engraved on the Cashbox handle did not match the serial number saved on the cashbox's electronic chip.	The CFO and the VP of Bus Operations should consider: a) Develop a process to inventory cashboxes periodically to ensure missing assets are identified and investigated, and asset records (e.g. Cashboxes, keys, etc.) in the Genfare System and elsewhere are updated. b) During the physical inventory of the cashboxes ensure the serial number engraved on the cashbox handle matches the serial number saved to the electronic cashbox chip. c) If the engraved cashbox handle serial number has worn off, either re-engrave with a unique number or dispose of the handle and update the Genfare system records.	Management agrees with the recommendation and will remedy this issue. **Target Completion Date**: September 30, 2019

Issues & Risk	Recommendation	Management Action Plan
4. **TREASURY CONTROLS** The daily treasury cash counts cash are intended to be "blind counts", meaning they don't know how much cash was counted by the Genfare farebox readers and vaulted to the Genfare vault for the day. We reviewed Genfare System access to see if anyone from Treasury could view the Genfare Revenue report and noted the Treasury Supervisor can see this data. We don't view this as a high risk because the Treasury Supervisor has staff under her who count the cash and there are always two individuals present during cash counts and the Treasury room activity is videotaped. However, to improve segregation of duties it will be necessary to remove the Treasury Supervisor's access to the Genfare cash reports.	The Controller and Manager of Revenue should consider eliminating the Treasury Supervisors access to the Genfare report that shows the cash count calculated by Genfare System.	Management implemented the recommendation. No further action is needed.

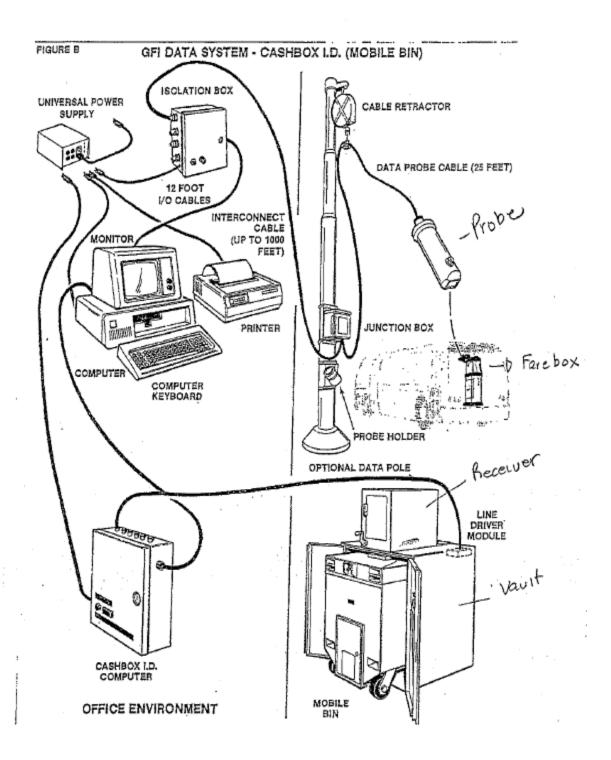| Issues & Risk	Recommendation	Management Action Plan
5. OPPORTUNITIES TO REDUCE THE NUMBER OF FARE OVERRIDES To provide efficiency in the Farebox process the default fare on the buses is set to a Single Ride fare of $1.25. If a passenger does not tell the bus operator that they want a different fare than Single Ride before placing money in the farebox, the bus operator must override the transaction to change to the requested fare. As noted in several audit issues above, no one has been monitoring override usage. Additionally, we believe that the number of overrides could be reduced by taking the following actions: • Adding passenger instructions at the top of each bus farebox stating "Please tell the driver what type of fare type you want". • Audio public message on bus training passengers on what to tell the bus operators • Adding video on website training passengers how to communicate with bus operator regarding type of fare desired.	The VP of Bus Operations, VP of Marketing, and the EVP of Planning & Strategy should consider developing a public information campaign to train customers on fare selection and cash payment process using multiple media types (e.g. sticker on farebox; audio public message on bus; website video, etc.). These actions may help in reducing the number of driver overrides on ticket fares	Management agrees with the recommendations. **Target Completion Date**: September 30, 2019

Exhibit A: "GFI DATA SYSTEM- CASHBOX I.D. (Mobile Bin)"

FIGURE B   GFI DATA SYSTEM - CASHBOX I.D. (MOBILE BIN)

Exhibit B: Genfare Components and Definitions

Glossary of General Terms

Bin I.D.	an electronic feature for tracking a mobile bin being inserted or removed from a vault housing.
Bus Number	a number entered into the farebox logic corresponding to the vehicle number.
Cashbox	secured in the lower portion of the farebox, it maintains separate revenue collections for coins and bills.
Cashbox I.D.	an electronic feature that allows tracking of a cashbox being inserted or removed from a farebox or receiver respectively.
Coin Bypass Mode	a limited mode of operation, it allows coins to be collected by the farebox during a coin-processing malfunction. Note when activated, coins are collected but not electronically counted. Bills, however, are still collected and counted.
Data System	receives and stores data from each farebox as it is probed. It prints reports and performs other functions. Located at each garage.
Excessive Route/Run	recorded when a farebox exceeds its maximum capability of storing 100-250 records. Note detailed data records and alarm records may be lost.
Farebox	an electronic registering device used to collect and store fare media.
Key Counts	an accumulated total corresponding to each farebox key pressed to classify fare or ridership.
Memory Clear	recorded when farebox data is intentionally cleared, or when data is lost.
Mobile Bin	secured inside vault housing, this transportable locked unit stores collected revenue from cashboxes in separate coin and bill compartments.
Portable Key	an electronic device capable of unlocking a farebox to access cashbox. No data interchange takes place.
Probing	using a data probe to optically transmit data between the farebox and the data system. Performed at the revenue island, it allows cashbox processing from farebox to receiver.
Receiver	a unit attached to the vault housing used to securely process revenue from a cashbox into a mobile bin.
Transit Day	currently defined to include all farebox probings from 4:30 a.m. on one day to 4:30 a.m. the following day. Daily reports include data correlating to this time frame.
TTP (tickets, tokens, and passes)	an accumulated total of each register corresponding to the various types of tickets, tokens, and magnetic passes processed by the farebox.
Vault	a stationary unit located at the revenue island that houses a mobile bin.
Vaulted	the process when a cashbox is removed from a farebox after probing and is placed into a receiver where revenue is transferred into a mobile bin.

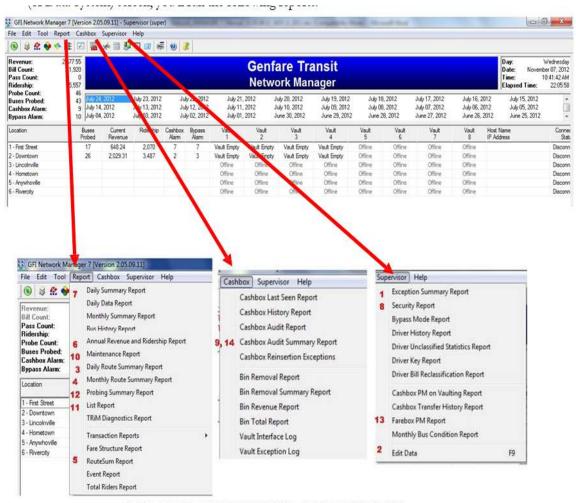# Exhibit C: Genfare Reports Available

Please refence page 11 of the Network Manager Manual
1. Quick Start Guide
This Quick Start Guide has 14 steps that help you:
-   **Analyze** basic revenue data
-   **Fix** erroneous driver input
-   **Generate reports** on basic revenue and ridership
    NOTE: We recommend printing report Steps 1-4 daily (Monday through Friday) Steps 1-4 are for preparing data for riderships reports/statistics. Remember you are always generating yesterday's data in the reports. So, on Monday, be sure to generate report for: Friday, Satuday, and Sunday. Other Steps (5-14) are optional, when needed.
The 14 reports are described briefly in this Quick Start Guide. For report details, see refernce (to each section in this manual). From the main menu (shown below) of the Network Manager (or Data System) screen, you'll run the following reports.

REPORT LOCATIONS IN 3 SEPARATE PULL-DOWN MENUS