

MUNICIPAL AUDITING REPORT CITY OF ROANOKE



RCPS Transportation Follow-Up May 31, 2016

Report Number: 16-016
Audit Plan Number: 16-109

*Municipal Auditing Department
Chartered 1974*

www.roanokeva.gov/auditing
Phone 540.853.5235

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AUDIT OBJECTIVES & SCOPE

Audit Objectives:

1. To determine that GPS units are properly functioning in all full-service buses and that management has developed a data management plan for the GPS data.

Yes with exceptions – We conclude that GPS units appear to be properly functioning in all full service buses as of April 13, 2016, but a data management plan has not been developed or implemented for the GPS data.

2. To determine that bus inspections are performed within Virginia Department of Education [VDOE] limits and Mountain Valley Transportation policy.

Yes with exceptions – We conclude that bus inspections are performed within VDOE limits but not within Mountain Valley Transportation policy. Bus inspections continue to be performed at shortened intervals.

Audit Scope:

We reviewed GPS unit documentation from April 2016, and discussed data management with Mountain Valley Transportation management personnel. We reviewed bus inspection records from April 1, 2015 through March 31, 2016, and bus out-of-service records from July 1, 2015 through March 31, 2016.

End of Audit Objectives and Scope

BACKGROUND

In April 2009, Roanoke City Public Schools [**RCPS**] entered into a Transportation Services Agreement [**TSA**] with Krapf, Jr & Sons, Inc, for the purpose of providing transportation of school students to and from RCPS's schools, sporting events and various extracurricular activities. Krapf subsequently established a wholly-owned subsidiary, Mountain Valley Transportation, to fulfill its contractual responsibilities which include the following:

- Operating expenses of all vehicles [including maintenance costs]
- Modernizing the fleet and maintaining an average bus age of seven (7) years
- Titling, registration and licensing of all vehicles
- Payment of all applicable taxes
- Maintaining a good public relations program
- Permitting only trained and competent drivers to operate buses
- Monitoring drivers' compliance with licensing regulations
- Administering a satisfactory safety program
- Providing written accident and breakdown reports

Roanoke City Public Schools maintained responsibility for:

- Supplying diesel fuel/gasoline for buses
- Scheduling and revising bus routes

The district maintained two [2] employees in its Transportation Division, the Director and Assistant Director of Transportation. They ensure adequate service levels, coordinate routes, approve and coordinate field trip requests, review and approve Mountain Valley Transportation invoices, monitor driver training sessions, and act as a liaison between the school district and Mountain Valley.

The Municipal Audit Department performed a Transportation audit in 2012 to evaluate specific compliance and performance criteria as specified in the TSA in April 2009, with the following audit objectives:

1. To determine the impact of the transportation services agreement on overall costs for student transportation.
 - a. **Conclusion:** Roanoke City Public Schools increased its investment in transportation and improved the quality of services and the bus fleet.
 - b. **No observations were noted.**

2. To verify improvements to the bus fleet were accomplished in accordance with the Transportation Services Agreement.
 - a. **Conclusion:** Mountain Valley Transportation accomplished the capital improvements required under the Transportation Services Agreement.
 - b. **No observations were noted.**
3. To determine if service level expectations specified by the Division were substantially achieved by the contractor.
 - a. **Conclusion:** Based on survey results, Mountain Valley Transportation substantially achieved the service level expectations of the Division.
 - b. **No observations were noted.**
4. To determine if processes were in place to operate buses safely in accordance with current laws and regulations.
 - a. **Conclusion:** Mountain Valley Transportation's processes supported safe operation of Roanoke City Public School buses overall. There were opportunities to strengthen maintenance processes that would provide more effective and efficient bus inspections. We were unable to determine the level of compliance with State regulations based on the available documentation.
 - b. **The following observations were noted:**
 - i. Malfunctioning GPS Units – nine [9] were not transmitting a signal, eight [8] of which had not transmitted a signal in more than 30 days, and two [2] in more than a year
 - ii. Inspection processes – using the 180-day/15,000 mile inspection checklist for 30-day/2,500 mile inspections significantly increased the time required for inspections; there was no cohesive system to manage fleet maintenance

As a result of the 2012 audit, Mountain Valley Transportation committed to the following action items:

1. To monitor GPS unit functionality weekly and to develop other beneficial uses of the data captured through the GPS system.

2. To replace the Shop Manager and improve shop record-keeping.
3. To require the Shop Manager audit actual work by shop mechanics.
4. To establish a new Maintenance Supervisor role tasked with ensuring the Shop Manager completed periodic audits in an acceptable manner.
5. To develop a relationship with the Virginia Department of Education and promote a principals-based approach to required inspections that promotes more efficient maintenance.
6. To fully implement the Dossier Fleet Maintenance Software and related processes to plan routine maintenance and required inspections at appropriate intervals.

In 2014, Municipal Auditing reviewed Mountain Valley Transportation's progress toward implementing its action plans and resolving the issues observed. Two (2) issues remained unresolved at that time:

1. Mountain Valley Transportation had changed GPS providers and had not developed a plan for utilizing GPS data to improve operations.
2. Mountain Valley Transportation had improved shop record keeping but had continued to inspect buses far more frequently than required by law.

End of Background

Objective 1: GPS Utilization

Management Response / Action Plan (September 2014):

Mountain Valley Transportation will initially be installing 20 new GPS units from Synovia Solutions. If the system performs as expected, the new units will be installed in all full service buses. Management will develop a data management plan as part of the implementation of this new system.

The upgraded GPS system now in use provides real-time capabilities for vehicle tracking and collecting related performance data. Tasks described in the 2012 Findings have been achieved, specifically:

Procedures providing protocols for reporting changes in GPS unit assignments are no longer necessary with the new system. The new system allows interactive assignment and changing of GPS unit to vehicle relationship. The reason this was identified as an issue during the 2012 Audit was because the legacy program for "Everyday Solutions" resided on the RCPS server and required extensive coordination between RCPS, Everyday Solutions, and ATT when reassigning GPS units to new or different vehicles.

Auditors also recommended that management develop a data management plan that:

- Identifies high value data
- Establishes quality controls
- Outlines routine and as-needed uses of the data
- Addresses data archiving and preservation

The upgraded system has the ability to generate data for management analysis or up-line reporting and review. It gives us the ability to establish Key Performance Indicators (KPI's) to monitor performance of drivers and equipment.

We currently have established daily reports to monitor Excessive Idling for the fleet. We intend to use the data to modify driver behavior and reduce the amount of idle time. This, in turn will help reduce fuel usage.

Other reports in use are Excessive Speeding reports and the Daily Diagnostics report that alerts users of GPS units that may not be operating properly.

The data produced from the Silverlining system is archived for user retrieval for 2 years and can be kept indefinitely where needed.

Follow-Up (May 2016) – Issue Not Resolved

We compared the GPS inventory listing to the listing of buses currently maintained by Mountain Valley Transportation to determine that a GPS unit is assigned to every bus in the fleet. While

there does appear to be a specific unit assigned to all buses, we did not physically match each GPS unit to each bus.

We inquired about the process to review and monitor malfunctioning GPS units per the weekly Hardware Health Report, and noted that the report was not reviewed by Mountain Valley Transportation personnel for a period of eight [8] months. This was due in part to the General Manager leaving in August 2015 without having notified the GPS vendor to email the weekly Hardware Health Report to another Mountain Valley Transportation employee. As a result, two [2] GPS units were replaced without updating the GPS system so that they would be recognized as assigned RCPS units, and five [5] units were not reporting data for more than 90 days.

The April 13, 2016 Hardware Health Report indicated that all GPS units were reporting and properly functioning as of April 13.

We discussed the current status of the data management plan with Mountain Valley Transportation management and identified that a formal data management plan has not been implemented. The goal is to have a data management plan on excessive idling and speeding; however, it is not yet in place for RCPS.

End of Objective 1

Objective 2: Premature Inspections

Management Response / Action Plan (2014):

Bus inspection intervals are closely monitored by maintenance personnel with the use of the Dossier system. On occasion, inspection intervals may fall short of VDOE limits (45 days or 5,000 miles); however, seldom (if ever) exceed the mandated timeline. We feel confident that our maintenance practices are superior in scope and in practice and that we adequately maintain the fleet for safe and reliable operation.

In many cases, the inspections are conducted when the mechanic may be performing an extensive repair action that required just about as much time and effort as the full inspection required. Typically, if within 10 days of the 45 day limit, the mechanic will complete the entire inspection. We have found it just as effective to "force" the inspection cycle ahead of schedule because the bus may not be readily available in 10 days.

We have found a few administrative errors where the mechanics performed an inspection at or near the due date/mileage threshold but failed to provide the documentation showing the inspection was completed. The next day another mechanic sees the inspection is not done and repeats the inspection process. These "mistakes" are few but happen nevertheless. We are discussing these issues with our maintenance team and are stressing the importance of communication and completing the proper documentation (attention to detail).

We feel these types of errors do not degrade the mechanical readiness of our fleet nor does it cause the equipment to be less safe. Our maintenance protocol operates on a budget and must maintain strict adherence as do all aspects of our operation. "Excessive" maintenance actions are avoided but in the case of "short-dated" inspections, are viewed as an acceptable error that keeps our equipment in a high state of mechanical readiness. We will continue to focus eliminating errors where possible.

Follow-Up (May 2016) – Issue Not Resolved

We reviewed bus inspection records from April 1, 2015 through March 31, 2016 for a random sample of fifteen [15] buses. We noted that all inspections were performed within the Virginia Department of Education's Preventive Maintenance Manual guidelines of once every 45 school days or every 5,000 miles.

We also reviewed maintenance records for bus inspections performed at too short an interval and identified the following:

- 90 out of 104 [86.54%] inspections were performed before they should have been based on MVT's policy of forcing inspections no earlier than 35 **school days** after the last inspection when a bus is in the shop for other services.
- 15 of 104 inspections [15.46%] were performed on buses that had traveled 500 miles or less since the previous inspection. See table below for a subset of these low-mileage inspections:

Hood Number	Calendar Days Between Inspections	School Days Between Inspections	Miles Between Inspections
H228	5	4	23
H7	37	26	29
H115	39	26	40
H115	31	23	35
H24	11	7	103

Note: Bus H24 is a spare bus and was also found to have been inspected twice in one day

We estimated the cost of the additional inspections performed during a one [1] year period using the following criteria:

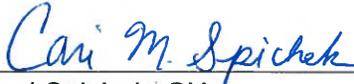
- 1.75 hours to complete an average inspection
- \$70 per hour labor rate
- 3.49 excessive inspections per bus per school year
- 156 buses in the fleet

The estimated cost is \$66,780 and 954 man-hours for an additional 545 bus inspections.

End of Objective 2

ACKNOWLEDGEMENTS

We would like to thank Mountain Valley Transportation personnel, specifically Susan Kramer, Arne Stensaker, Garry Klaiber and Wade Yopp, for their assistance throughout this review. We would also like to thank Stan Crowgey for his time and input.



Cari Spichek, CIA
Senior Auditor



Drew Harmon, CPA, CIA
Municipal Auditor



Mountain Valley Transportation

Professional Drivers Making a Difference

5401 Barns Ave

Roanoke, VA 24019

Phone: 540.777.0101 Fax: 540.777.0612

June 7, 2016

Mr. Drew Harmon, CPS, CIA
Municipal Auditor
Noel C. Taylor Municipal Building
Room 502N
215 Church Avenue, SW
Roanoke, VA 24011

Dear Mr. Harmon:

We are providing our comments to the Municipal Auditing Report – RCPS Transportation Follow-Up (Report #16-016, Audit Plan Number 16-109), dated May 31, 2016.

Malfunctioning GPS Units

This issue has been corrected. We currently have the Operations Manager, our Lead Technician and the Area General Manager receiving a weekly Hardware Health Report. This report shows the units that are not working. Our Lead Technician assigns the inspection/repair of the unit. That technician signs off on the health report stating what the issue was. The hardware health report is then filed.

Premature Inspections

Additional processes have been put in place to ensure premature inspections are not an issue. Our Area Maintenance Manager was able to change the settings in our Fleet Maintenance Program to show vehicles with inspections expiring between 45 and 60 days. This report is produced on Monday mornings and easily accessed by all technicians. Once the inspection is complete, they highlight the vehicle on the list. As an added measure and at your recommendation, we have implemented the use of a window sticker showing the date of inspection. With the additional processes in place, we feel this item has also been corrected.

GPS Data Management Plan

As discussed, we will be implementing a data management plan to review idling and speeding events. We are requesting one year to have this fully implemented. While there is a written process in place, we need to engage the staff to gain a better understanding of the system software along with the reports and data available to us.

The processes we intend to use to identify idling and speeding practices are outlined on the Action Plan Template you provided. I have also attached a copy of a log we will be implementing to record behaviors.

It was a pleasure meeting with you and I appreciate the time you have invested to improve our processes.

If you have questions, please don't hesitate to contact me.

Sincerely,



Sue Kramer
Area General Manager
Mountain Valley Transportation
540-777-0101

Cc: Stan Crowgey, RCPS Director of Transportation

**Summary of Management Action Plans
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Management Action Plan – Data Management Plan

Idle Alerts

Transportation Assistant Procedure:

1. View daily idling alerts for vehicles that were outside of the allotted five-minute idle time frame. (10 minutes of idle time is permitted during pre-trips and maintenance cold starts)
2. For alerts received during your shift, radio driver and ask them to contact you if they are in a safe location so you can let them know of idle time and confirm location.
3. Enter information on behavior log to include Driver Name, Bus #, location and the exception. Exception to this rule is on cold start days which we only use data after 10:00am
4. Complete column L,M,N (action taken, date action taken, your initials)

Supervisor/Site Manager Procedure:

1. Supervisor/Site Manager to view behavior log daily to be sure driver issues have been communicated. (Best done at the end of business day)
2. Pull past information on driver using filters in row 1 to look driver up by name. This will show history for driver.
3. Record discipline and date (Column O and Column P) based on guidelines established **(See Discipline Tab)**
4. Discipline is based on idle time in excess of 10 minutes.

Speeding Alerts

Procedure:

Transportation Assistant Procedure:

1. Print weekly speeding report on Mondays and provide to Supervisor/Site Manager.
2. Enter information on behavior log to ensure driving issues have been addressed. Must complete driver name, bus number, location and report information.
3. Complete column L,M,N (action taken, date action taken, your initials)

Supervisor/Site Manager Procedure:

1. Supervisor/Site Manager to view report weekly and address speeding violations. Anything over 7 mph registers as an event.
2. Pull past information on driver using filters in row 1 to look up driver by name. (Do not sort page) This will show driver history.
3. Record discipline and date (Column O and Column P) based on guidelines established **(See Discipline Tab)**

**Summary of Management Action Plans
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16-109**

Assigned To	Target Date
Transportation Assistant, Operations Manager	5/31/17

Management Action Plan – Malfunctioning GPS Units	
<p>Weekly Hardware Health Report Received Monday's approximately 1:00 am. For non-functioning units, Garry Klaiber will assign a technician to inspect and repair unit if necessary.</p> <p>Technician must communicate action taken to ensure proper transmission.</p> <p>Report sent back to Arne Stensaker for file.</p> <p>Replacements will be coordinated through Arne Stensaker, Operations Manager.</p> <p>This Action Plan in place.</p>	
Assigned To	Target Date
Arne Stensaker, Operations Manager/Garry Klaiber, Lead Technician	06/01/16

Management Action Plan – Premature Inspections	
<p>Monday am, parts coordinator prints report from Dossier showing vehicles due for inspection between 45 and 60 days or 15 days from expiration.</p> <p>Technicians pull vehicles for inspection and coordinate a spare vehicle.</p> <p>Highlight vehicle on list when inspection is complete.</p> <p>Apply window stickers with date inspection completed.</p> <p>Parts Coordinator will receive repair order for inspection and confirm vehicle is highlighted on list.</p> <p>This Action Plan is place.</p>	
Assigned To	Target Date
Garry Klaiber, Lead Technician/ Brenda Kesler, Parts Coordinator	06/01/16

