



**Program Evaluation and Audit**

**Metro Transit Physical Inventory Audits**

**South Garage**

**Ruter Garage**

**Unit Overhaul**

**Rail Support Facility**

**System-Wide Cycle Counts**

**15 April, 2012**

# INTRODUCTION

## Background

The Txbase System, implemented in 1995-96, consists of interactive computer software designed to provide an integrated inventory control, inventory management, purchase order management, materials requisition management and accounts payable matching system. Twelve stockrooms and the Central Warehouse use Txbase to control and account for parts and supplies used in Metro Transit operations.

To ensure timely, cost-effective maintenance for Metro Transit vehicles, many commonly used parts and equipment are stored at any one of its 13 stockrooms. On-site inventory availability is critical to the maintenance and safe operation of Metro Transit buses, trains and facilities. This presents challenges for accurate accounting for inventory and continuing control of stockrooms that are not staffed at all hours but that require access, 24 hours a day, seven days a week. When the inventory count is incorrect, the value of inventory will be misrepresented. Beyond the immediate financial implications, errors in inventory counts can generate excessive ancillary costs associated with searching for missing stock and unnecessary expediting of incoming and outgoing materials. It can also drive changes in forecasts resulting in shortages or excess and obsolete inventory. As a result, stockrooms have been viewed by Metro Transit and Program Evaluation and Audit (Audit) as relatively high risk and Audit has reviewed three or four stockrooms annually for procedural compliance, accuracy of records, and identification of possible missing items.

Stockkeepers at each stockroom are required to conduct daily inventory cycle counts Monday through Friday (Metro Transit Material Management *Policy 06.06.07, rev. 4, July 22, 2009, Cycle Counts*). A cycle count consists of a Txbase generated random selection of a predetermined number of part numbers (usually 25 or 40) for which the stockkeeper physically counts the quantity and compares that to the Txbase inventory. Any part number variance of ten physical units or \$50 requires that the lead stockkeeper identify the reason for the variance.

Audit began monitoring daily stockroom inventory cycle count variance data in September 2008 as an additional method for assessing risk. Stockrooms with variance rates exceeding 10 percent are selected for review as are stockrooms in which significant internal control problems had been identified during prior audits. Neither of these conditions presently exists at the South garage or the Unit Overhaul stockrooms. They were selected for review because they had last been reviewed in 2008. The Ruter garage was last reviewed in 2009 and it had the highest cycle count variance (9%) of all the stockrooms in 2011. The Rail Support Facility (RSF) is a new site; the stockroom first recording cycle counts in October 2011.

## **Assurances**

This audit was conducted in accordance with the Institute of Internal Auditors' *International Standards for the Professional Practice of Internal Auditing* and the U. S. Government Accountability Office's *Government Auditing Standards*.

## **Scope**

Audits were conducted at the South garage, Ruter garage, the Rail Support Facility and the Unit Overhaul stockrooms. Samples were drawn from all inventory items listed in Txbase as of the closing of inventory transactions on the day before the actual count was taken.

## **Methodology**

After eliminating inventory items with zero extended cost, Audit selected a statistically significant, random sample with a 95% level of confidence and a 5% error rate plus a judgmental sample of the highest extended value items. Universe and sample stratification data based on average unit cost for the three stockrooms are included at Exhibit I. Audit physically counted the selected inventory items and compared that count to the quantity stated in Txbase. The following methods of inquiry were also used:

- Differences were noted and discussed with Material Management and Maintenance personnel.
- Findings and results were recorded and summarized.
- The status of implementation of prior audit recommendations was reviewed.
- Inventory Management and Bus Maintenance policies and procedures were reviewed.
- Daily cycle count (initial count) results were monitored and analyzed.
- Independent cycle counting studies were reviewed.

# OBSERVATIONS

Physical inventory counts were performed at the Rail Support Facility and South garage stockrooms on February 15, 2012 and the Ruter garage and Unit Overhaul stockrooms on February 16, 2012. Observations regarding those audits follow. In addition, statistical data is summarized in the exhibits listed below which are included at the end of this report.

- Exhibit I: Universe & Sample Stratification Data for the four stockrooms.
- Exhibit II: Preliminary Statistical Data Summary for the four stockrooms. This is the raw data gathered at the time of physical inventory count.
- Exhibit III: Adjusted Statistical Data Summary for the four stockrooms. This is the raw data adjusted for appropriate reconciling reasons.
- Exhibit IV: Cycle Count Summary Data
- Exhibit V: Researchable Cycle Count Judgmental Sample – Reasons for Variances
- Exhibit VI: Researchable Cycle Count Judgmental Sample – Results by Calendar Quarter
- Exhibit VII: Variance Summary
- Exhibit VIII: Comparative Prior Audit Data

## South Garage

Audit randomly sampled 178 items valued at \$90,188, initially finding 9 variances. Audit also judgmentally sampled the three items with the highest value totaling \$151,346, resulting in one additional variance.

The Manager, Material Management (Manager), reviewed the preliminary sample results and provided documentation explaining five variances. Adjusting for these items, Audit estimates a revised net shortage of (\$702) and absolute variance of \$1,048 from the \$606,668 total South garage inventory.

The net result is within an acceptable range (+ or - 1%) for both the revised random sample and the revised combined random/judgmental sample. The absolute variance (+ or - 3%) for both samples is also within an acceptable range. In addition, only five of the 181 sampled items varied from their stated inventory value. This is within the acceptable range. See Exhibits II, III and VII for additional statistical information. Compared to the April 2008 audit, each of the five variance factors used by Audit to evaluate inventory effectiveness and efficiency has improved (Exhibit VIII).

## **Ruter Garage**

Audit randomly sampled 178 items valued at \$91,231, finding four variances. Audit also judgmentally sampled the five items with the highest dollar value totaling \$157,159, in which no variances were identified.

The Manager reviewed the preliminary sample results and provided documentation explaining one variance. Adjusting for this item, Audit estimates a revised net excess value of \$506 and absolute variance of \$656 from the \$635,376 total Ruter garage stockroom inventory.

The net result is within an acceptable range for both the revised random sample and the revised combined random/judgmental sample. The absolute variance for both samples is also within an acceptable range. In addition, only three of the 183 sampled items varied from their stated inventory value. This is within the acceptable range. See Exhibits II, III and VII for additional statistical information. Compared to the April 2009 audit, each of the five variance factors used by Audit to evaluate inventory effectiveness and efficiency has improved (Exhibit VIII).

## **Unit Overhaul**

The Unit Overhaul maintenance facility is responsible for major bus system repair and maintenance including transmission overhauls. The Unit Overhaul stockroom maintains the parts required for such specialized work. Most inventory items are housed in a protected heavy wire stockroom, although large items are stored outside the stockroom.

Audit randomly sampled 150 items valued at \$113,775, initially finding 26 variances. Audit also judgmentally sampled those four items with the highest value totaling \$58,719, in which no variances were identified.

The Manager reviewed the preliminary sample results and provided documentation explaining 14 full and two partial variances. Adjusting for these items, Audit estimates a revised net overage of \$2,871 and absolute variance of \$5,371 from the \$428,340 total Unit Overhaul stockroom inventory.

The net result is within an acceptable range for both the revised random sample and the revised combined random/judgmental sample. The absolute variance for both samples is also within an acceptable range. Twelve variances still remain from the 154 items sampled, four over the acceptable number. See Exhibits II, III and VII for additional statistical information. Compared to the April 2008 audit, each of the five variance factors used by Audit to evaluate inventory effectiveness and efficiency has improved (Exhibit VIII).

## **Rail Support Facility**

The Rail Support Facility (RSF) opened for operations in mid-2011. It houses operations that maintain the traction power, rail maintenance, and signal and communications systems of the light rail transit portion of the Metro Transit system. Stockroom inventory is very diverse ranging from simple screws and 12 foot metal poles to fiber optic cable, complicated circuit boards and integrated system devices.

Audit randomly sampled 144 items valued at \$425,802, initially finding seven variances. Audit also judgmentally sampled those seven items with the highest value totaling \$255,033, in which no variances were identified.

The Manager reviewed the preliminary sample results and provided documentation explaining three variances. Adjusting for these items, Audit estimates a revised net overage of \$121 and absolute variance of \$827 from the \$1,475,181 total Rail Support Facility stockroom inventory.

The net result is within an acceptable range for both the revised random sample and the revised combined random/judgmental sample. The absolute variance for both samples is also within an acceptable range. In addition, only 4 of the 151 sampled items varied from their stated inventory value. This is within the acceptable range. See Exhibits II, III and VII for additional statistical information.

## **Stockroom Cycle Counting**

Inventory cycle counting goals include:

- understanding the reason for errors
- correcting the processes affecting them
- eliminating the need for an annual 100% physical inventory
- efficiently use resources

Inventory items are classified as A, B or C based upon value, calculated as the total number issued throughout Metro Transit over the previous 12 months, multiplied by the unit price. A, B and C classifications are aligned with the best business practices of The Association of Operations Management. Excluding the three highest valued items, the top 70% are classified as A items, 71% to 89% as B items, and the remaining 11% as C Items. A items are counted once every 120 days (3 times/yr), B items once every 180 days (2 times/yr) and C items once a year.

The Manager, Material Management, determined that stockkeepers would have time to cycle count either 40 or 25 items depending upon the stockroom. The standard part number daily cycle count (standard number) for the five garages, the RSF and the LRT Facility is 40, for the Central Warehouse its 80 and for the five specialty stockrooms its 25.

The Central Warehouse is the only facility in which all items needed at more than one stockroom are stocked. The number of items stocked in each stockroom affects the number of items Txbase chooses for counting each day. The number of inventory items stocked in each of the stockrooms under review is as follows (as a reference, the Central Warehouse stocks 14,464 items):

	<u>Total Inventory Items</u>
● Rail Support Facility	1,631
● South Garage	5,054
● Unit Overhaul	3,171
● Ruter Garage	5,350

As listed in Exhibit IV, Txbase provides the standard number to the garage stockrooms (45.20%) more often than for the rail (25.38%) or specialty (22.20%) stockrooms. However, the rail (1.61%) and specialty (3.70%) stockrooms have lower variance rates than the garage (6.14%) stockrooms. See Exhibit IV for additional detail.

Audit monitored the daily cycle count reports for each stockroom for the 12 month period January 1, 2011 through December 31, 2011. This included 260 days on which cycle counts could have been conducted. Actual days in which cycle counts were conducted ranged from 179 (Brake Shop) to 260 (Central Warehouse). This may indicate that adjustments are needed to the standard number of items selected for cycle counting for those stockrooms that are not generating part numbers to count every day. Conversely, those stockrooms that have generated part numbers every day may not be counting enough items, with the possibility that some may not be counted as often as they should, or in the case of “C” items, not at all.

Comparing the number of items in which variances occurred to the number of items counted yields a variance rate. The actual variance rate ranged from 1.26% for the LRT Facility to 9.26% for the Ruter stockroom. Audit recommends that such variances be less than five percent. Ten stockrooms achieved this goal. The remaining three stockrooms fell between 5.25% and 9.26%.

As a total, stockroom variances have improved since 2008, declining by just under 5% (see Exhibit IV). The most significant declines have been at the Brake Shop (19.01%) and the East Metro garage (10.77%). The improvement for the Brake Shop was the result of gaining greater control over inventory during 2009 by placing parts that had previously been located in open maintenance work areas into a secured stockroom. That variance rate dropped substantially from 24.26% (2008) to 3.86% (2009) to 0.98% (2010). However, in 2011 stockroom variances increased slightly (0.31%) assisted by substantial rises in the Heywood garage (5.0%) and Brake Shop (4.27%) variances.

Metro Transit Material Management *Policy 06.06.07, rev. 4, July 22, 2009, Cycle Counts*, states that “the lead stockkeeper of each stockroom will research each discrepancy where the absolute variance is greater than \$50 or the physical count is incorrect by ten or more items.” Such variances are identified electronically and a standard form is prepared for their review. As a way to clarify and systemize reasons for variances, an additional form

was introduced in 2011 by the Manager providing a step by step guide to the review process. Upon finalizing their work, the documentation is electronically placed in a shared location for management review.

Considering only those variances that exceeded \$50, Audit identified 425 for calendar year 2011 (there were 420 in 2010). Audit reviewed a judgmental sample of 262 (231 in 2010) from those 425 variances. The following eight reasons for variances were identified.

Reason for variance not known	68
Transaction not recorded when taken from or returned to stock	58
Miscounting during the cycle count	34
Finding the item in an incorrect location	30
Correction of past error	35
Variance report not provided to stockkeeper	16
Part was located at a different garage	9
Miscellaneous	<u>12</u>
Total	262

In 68 (26%) of the 262 variances sampled, the stockkeeper could not determine a reason for the variance. Adding the 16 occasions when a variance report had not been provided to the stockkeeper, a reason was not known for 84 (32%) of the total 262 variances. These are the same percentages as compiled for 2010. Stockkeeper miscounting (34 instances in which the item was miscounted that day and an additional 35 instances in which a previous cycle count error was corrected) was the second most common reason (69 instances – an increase of 11 from 2010) for variances, followed by obtaining parts from the stockroom without charging them to a work order and returning parts to the stockroom without adding them back into inventory (58 instances – the same as in 2010). The Central Warehouse accounted for 86 (33% - down from 41% in 2010) of all researched variances, followed by the Heywood (48 – 18%) and Ruter (32 – 12%) garages. A detailed account of this sample by stock area is at Exhibit V.



# CONCLUSIONS

*1. South Garage, Ruter Garage and the Rail Support Facility – Internal controls are adequate to ensure accurate inventory reporting and proper safeguarding of assets.*

The five variance indicators tracked by Audit came well within their acceptable ranges for these three stockrooms. This is the third consecutive audit in which stockrooms have achieved all five measures. In addition, each of the five factors improved over the results of the most recent prior audits for the South and Ruter garages (no prior audit has been conducted for the Rail Support Facility). Material Management and Bus Maintenance personnel have done an outstanding job complying with existing internal controls to ensure a safe and accurate inventory count.

*2. Unit Overhaul – Internal controls are adequate to ensure safeguarding of assets. However, adherence to established controls can be strengthened to assure accurate inventory counts are recorded.*

Four of the five variance indicators tracked by Audit are within prescribed ranges and each of the five factors improved over the results of the most recent April 2008 audit of inventory at the Unit Overhaul stockroom. However, the number of inventory items for which variances appeared exceeded the prescribed limit (12 vs. 8). Reducing the types of errors listed under *Stockroom Cycle Counting*, above will have a positive influence on this variance.

*3. System – Wide Cycle Counting: Daily cycle counting is an internal control established to ensure accurate inventory reporting and safeguarding of assets. The following actions are needed to strengthen this control:*

- *More attention to obtaining accurate information while conducting cycle counts.*
- *Additional variance research diligence.*
- *Greater adherence to standard operating procedures by both stockroom and Bus Maintenance personnel.*

Some of the reasons for variances can be assigned to stockkeeper inattention during the initial cycle counting process (miss-keyed or miscounted) and some to possible stockkeeper and/or Bus Maintenance personnel inattention to standard operating procedures (not recording the transaction when taken from or returned to stock and items found in incorrect locations). In addition, even with the introduction of a standard research form, the number of instances in which the reason for the variance is unknown has not changed.

# RECOMMENDATIONS

Program Evaluation and Audit recommendations are categorized according to the level of risk they pose for the Council. The categories are:

- **Essential** – Steps must be taken to avoid the emergence of critical risks to the Council or to add great value to the Council and its programs. Essential recommendations are tracked through the Audit Database and status is reported twice annually to the Council’s Audit Committee.
- **Significant** – Adds value to programs or initiatives of the Council, but is not necessary to avoid major control risks or other critical risk exposures. Significant recommendations are also tracked with status reports to the Council’s Audit Committee.
- **Considerations** – Recommendation would be beneficial, but may be subject to being set aside in favor of higher priority activities for the Council, or may require collaboration with another program area or division. Considerations are not tracked or reported. Their implementation is solely at the hands of management.
- **Verbal Recommendation** – An issue was found that bears mentioning, but is not sufficient to constitute a control risk or other repercussions to warrant inclusion in the written report. Verbal recommendations are documented in the file, but are not tracked or reported regularly.

## Unit Overhaul

1. **(Significant) Metro Transit has established adequate internal control procedures, but needs to strengthen adherence to controls over the recording of inventory transactions to assure that inventory quantities are accurately reported.**

As stated in the *Conclusions* section, above, internal controls within the South garage, the Ruter garage and the Rail Support Facility stockrooms are adequate to ensure accurate accounting of inventory and safeguarding of assets. Due to the unique nature of Unit Overhaul, most parts are obtained by the mechanics themselves rather than through the stockkeeper, the common practice at the other stockrooms. This difference has led to more item variances and less compliance with established procedures by both Maintenance and Materials Management personnel. With greater adherence to those procedures, the number of variances experienced at the Unit Overhaul stockroom can be reduced to an acceptable level. Recording accurate inventory quantities allows Metro Transit to manage inventory in an effective and efficient manner.

**Management Response:** *Material and Bus Management met with all technicians and stockkeepers responsible for inventory accountability operations of the Unit Overhaul*

*Stockroom. During this meeting, the management team reviewed the proper procedures for inventory control. Emphasis was placed on:*

- *properly recording incoming and outgoing inventory items and quantities,*
- *ensuring incoming inter-branch deliveries are correct, and*
- *ensuring that manufactured work orders are correct and complete before items are placed into stock..*

**Staff Responsible:** *Supervisor/Material Planner – Bus  
Supervisor, Unit Overhaul*

**Timetable:** *Completed - April 16, 2012*

### **System-Wide Cycle Counting**

- 2. (Significant) Metro Transit should continue to impress upon stockroom and Maintenance personnel adherence to procedures when issuing/obtaining and receiving/returning inventory items. In addition, stockkeepers should be more diligent in conducting cycle counts and researching variances.**

Inventory control has improved due to cycle counting and variance research by stockkeepers. However, greater adherence by both stockroom and Bus Maintenance personnel to procedures and more care in initially recording transactions can lead to increased effectiveness of the cycle counting process and greater accuracy of recorded inventory quantities. Twenty-two percent of researched variances were due to errors in issuing/obtaining and receiving/returning items.

Over 26% of all researched variances reviewed by Audit were due to stockkeeper errors in recording the current cycle count or in correcting errors from past inventory counts. An additional 26% resulted in a determination of “reason unknown.” Many of these can be eliminated or reclassified, improving the quality of management information provided through the cycle counting process, by being more careful and by looking a little deeper.

**Management Response:** *Over the last four years, through improved processes and oversight, the Material Management Department has reduced the percentage of errors on cycle counts by over 52%. To continue this very positive trend, the Material Management Department will establish performance measurements and goals for each location. These metrics will be reported on a consistent manner to all stockkeepers, as well as the maintenance department for which the stockroom supports.*

*When a stockrooms falls below the performance metrics, the members of that stockroom will receive additional training to ensure they perform at the standard established by Metro Transit Material Management.*

**Staff Responsible:** *Manager, Material Management*

**Timetable:** *August 1, 2012*

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**Exhibit I: Universe and Sample Stratification Data**

**South Garage (February 15, 2012)**

<u>Average Extended Cost</u>	<u>Size of Universe</u>	<u>Size of Sample</u>	<u>Value of Universe</u>	<u>Value of Sample</u>
\$0 to \$200	3,981	72	\$146,941	\$2,855
\$201 to \$750	441	63	161,335	23,679
\$751 to \$5,000	<u>102</u>	<u>43</u>	<u>147,046</u>	<u>63,654</u>
<b>Sub-Total</b>	<b>4,524</b>	<b>178</b>	<b>\$455,322</b>	<b>\$90,188</b>
<b><u>100% Judgmental Sample</u></b>				
\$5,001 and above	<u>3</u>	<u>3</u>	<u>151,346</u>	<u>151,346</u>
<b>Total</b>	<b>4,527</b>	<b>181</b>	<b>\$606,668</b>	<b>\$241,534</b>

**Ruter Garage (February 16, 2012)**

<u>Average Extended Cost</u>	<u>Size of Universe</u>	<u>Size of Sample</u>	<u>Value of Universe</u>	<u>Value of Sample</u>
\$0 to \$225	4,257	72	\$159,197	\$3,110
\$226 to \$750	409	62	159,672	24,044
\$751 to \$5,000	<u>113</u>	<u>44</u>	<u>159,348</u>	<u>64,077</u>
<b>Sub-Total</b>	<b>4,779</b>	<b>178</b>	<b>\$478,217</b>	<b>\$91,231</b>
<b><u>100% Judgmental Sample</u></b>				
\$5,001 and above	<u>5</u>	<u>5</u>	<u>157,159</u>	<u>157,159</u>
<b>Total</b>	<b>4,784</b>	<b>183</b>	<b>\$635,376</b>	<b>\$248,390</b>

**Unit Overhaul (February 16, 2012)**

<u>Average Extended Cost</u>	<u>Size of Universe</u>	<u>Size of Sample</u>	<u>Value of Universe</u>	<u>Value of Sample</u>
\$0 to \$350	2,589	71	\$116,256	\$3,210
\$351 to \$1,500	178	52	126,822	38,295
\$1,501 to 7,500	<u>44</u>	<u>27</u>	<u>126,543</u>	<u>72,270</u>
<b>Sub-Total</b>	<b>2,811</b>	<b>150</b>	<b>\$369,621</b>	<b>\$113,775</b>
<b><u>100% Judgmental Sample</u></b>				
\$7,501 and above	<u>4</u>	<u>4</u>	<u>58,719</u>	<u>58,719</u>
<b>Total</b>	<b>2,815</b>	<b>154</b>	<b>\$428,340</b>	<b>\$172,494</b>

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**Exhibit I: Universe and Sample Stratification Data**

**Rail Support Facility (February 15, 2011)**

<b><u>Average Extended Cost</u></b>	<b><u>Size of Universe</u></b>	<b><u>Size of Sample</u></b>	<b><u>Value of Universe</u></b>	<b><u>Value of Sample</u></b>
\$0 to \$2,000	1,398	69	\$405,383	\$16,157
\$2,001 to \$5,500	123	46	409,273	153,997
\$5,501 to 25,000	<u>47</u>	<u>29</u>	<u>405,492</u>	<u>255,648</u>
<b>Sub-Total</b>	<b>1,568</b>	<b>144</b>	<b>\$1,220,148</b>	<b>\$425,802</b>
<b><u>100% Judgmental Sample</u></b>				
\$25,001 and above	<u>7</u>	<u>7</u>	<u>255,033</u>	<u>255,033</u>
<b>Total</b>	<b>1,575</b>	<b>151</b>	<b>\$1,475,181</b>	<b>\$680,835</b>

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**Exhibit II: Preliminary Statistical Data Summary**

	<b>South Garage</b>	<b>Ruter Garage</b>	<b>Unit Overhaul</b>	<b>Rail Support Facility</b>
<b>Random Sample</b>				
Shortages	7	2	19	6
Overages	2	2	7	1
Value of Sample Shortages	(2,686)	(623)	(1,321)	(1,302)
Value of Sample Overages	21	135	1,421	299
Net Sample Variance Value	(2,665)	(488)	100	(1,003)
Sampled Inventory Shortage %	-2.98%	-0.68%	-1.16%	-0.31%
Sampled Inventory Overage %	0.02%	0.15%	1.25%	0.07%
<b>Total Random Sample Inventory</b>				
Value of Estimated Shortages	(6,990)	(4,199)	(6,744)	(5,344)
Value of Estimated Overages	291	581	13,967	474
Net Projected Variance	(6,699)	(3,618)	7,223	(4,870)
Net Projected Variance%	-1.47%	-0.76%	1.95%	-0.40%
Absolute Variance	7,281	4,780	20,711	5,818
Absolute Variance %	1.60%	1.00%	5.60%	0.48%
<b>Judgmental Sample</b>				
Shortages	1	0	0	0
Overages	0	0	0	0
Value of Sample Shortages	(103)	0	0	0
Value of Sample Overages	0	0	0	0
<b>Random &amp; Judgmental Combined</b>				
Value of Estimated Shortages	(7,093)	(4,199)	(6,744)	(5,344)
Value of Estimated Overages	291	581	13,967	474
Net Projected Variance	(6,802)	(3,618)	7,223	(4,870)
Net Projected Variance %	-1.12%	-0.57%	1.69%	-0.33%
Absolute Variance	7,384	4,780	20,711	5,818
Absolute Variance %	1.22%	0.75%	4.84%	0.39%
Total Variance Items	10	4	26	7
Variant Item Number Ratio	5.52%	2.19%	16.88%	4.64%
Acceptable # of Variance Items	9	9	8	7
Acceptable Variant Item Ratio	5.00%	5.00%	5.00%	5.00%

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**Exhibit III: Adjusted Statistical Data Summary**

	<b>South Garage</b>	<b>Ruter Garage</b>	<b>Unit Overhaul</b>	<b>Rail Support Facility</b>
<b>Random Sample</b>				
Shortages	4	1	9	3
Overages	1	2	3	1
Value of Sample Shortages	(97)	(1)	(256)	(120)
Value of Sample Overages	3	135	206	299
Net Sample Variance Value	(93)	134	(50)	179
Sampled Inventory Shortage %	-0.11%	0.00%	-0.23%	-0.03%
Sampled Inventory Overage %	0.00%	0.15%	0.18%	0.07%
<b>Total Random Sample Inventory</b>				
Value of Estimated Shortages	(875)	(75)	(1,250)	(353)
Value of Estimated Overages	173	581	4,121	474
Net Projected Variance	(702)	506	2,871	121
Net Projected Variance%	-0.15%	0.11%	0.78%	0.01%
Absolute Variance	1,048	656	5,371	827
Absolute Variance %	0.23%	0.14%	1.45%	0.07%
<b>Judgmental Sample</b>				
Shortages	0	0	0	0
Overages	0	0	0	0
Value of Sample Shortages	0	0	0	0
Value of Sample Overages	0	0	0	0
<b>Random &amp; Judgmental Combined</b>				
Value of Estimated Shortages	(875)	(75)	(1,250)	(353)
Value of Estimated Overages	173	581	4,121	474
Net Projected Variance	(702)	506	2,871	121
Net Projected Variance %	-0.12%	0.08%	0.67%	0.01%
Absolute Variance	1,048	656	5,371	827
Absolute Variance %	0.17%	0.10%	1.25%	0.06%
Total Variance Items	5	3	12	4
Variant Item Number Ratio	2.76%	1.64%	7.79%	2.65%
Acceptable # of Variance Items	9	9	8	7
Acceptable Variant Item Ratio	5.00%	5.00%	5.00%	5.00%

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**Exhibit IV: Cycle Count Summary Data**

January 1 - December 31, 2011															
Stockroom	Cycle	Days		Days		Actual #	Variances		2010	2009	2008	'10-'11	'08-'11	Note	
	Count	Std. #	Std. #	No	% No		% Std	#				Rate	Var.		Var.
	Days	#	Count	Var.	Var.	Counted	Selected					Change	Change		
Ruter	254	40	141	65	25.59%	55.51%	7,293	675	9.26%	8.43%	8.24%	12.45%	-0.83%	3.19%	
East Metro	250	40	90	143	57.20%	36.00%	5,590	238	4.26%	7.12%	13.34%	15.03%	2.86%	10.77%	
South	254	40	112	156	61.42%	44.09%	6,809	253	3.72%	3.86%	6.67%	7.56%	0.14%	3.84%	
Nicollet	235	40	85	154	65.53%	36.17%	5,423	254	4.68%	5.40%	7.63%	7.96%	0.72%	3.28%	
Heywood	252	40	85	114	45.24%	33.73%	6,454	517	8.01%	3.01%	3.40%	6.13%	<b>-5.00%</b>	-1.88%	
Garage Total	1,245		513	632	50.76%	<b>41.20%</b>	31,569	1,937	<b>6.14%</b>	5.52%	7.61%	10.33%	-0.62%	4.19%	
LRT Facility	253	40	62	210	83.00%	24.51%	5,886	74	1.26%	1.73%	4.73%	7.00%	0.47%	5.74%	
Northstar	235	25	42	207	88.09%	17.87%	2,330	39	1.67%	2.06%	0.52%	N/A	0.39%	N/A	2
Rail Support Facility	40	40	30	22	55.00%	75.00%	1,652	46	2.78%	N/A	N/A	N/A	N/A	N/A	2
Rail Total	528		134	439	83.14%	<b>25.38%</b>	9,868	159	<b>1.61%</b>	3.35%	3.67%	7.00%	1.74%	5.39%	
Central Warehouse	260	80	38	68	26.15%	14.62%	14,690	588	4.00%	3.78%	3.55%	6.91%	-0.22%	2.91%	
Body Shop	214	25	32	190	88.79%	14.95%	2,179	37	1.70%	0.88%	2.23%	2.49%	-0.82%	0.79%	
Elec/Fare Repair	208	25	48	158	75.96%	23.08%	2,950	80	2.71%	4.59%	3.16%	8.42%	1.88%	5.71%	
Brake Shop	179	25	24	144	80.45%	13.41%	1,580	83	<b>5.25%</b>	<b>0.98%</b>	<b>3.86%</b>	<b>24.26%</b>	<b>-4.27%</b>	19.01%	
Unit Overhaul	211	25	96	133	63.03%	45.50%	3,841	146	3.80%	3.24%	5.26%	5.59%	-0.56%	1.79%	
Specialty Total	1,072		238	693	64.65%	<b>22.20%</b>	25,240	934	<b>3.70%</b>	1.80%	3.78%	8.24%	-1.90%	4.54%	
<b>All Stock Areas</b>	<b>2,845</b>		<b>885</b>	<b>1,764</b>	<b>62.00%</b>	<b>31.11%</b>	<b>66,677</b>	<b>3,030</b>	<b>4.54%</b>	<b>4.23%</b>	<b>5.98%</b>	<b>9.51%</b>	<b>-0.31%</b>	<b>4.97%</b>	

- Notes: 1. Large and bolded numbers are used in the report narrative.  
2. The Rail Support Facility began service in October 2011; the Northstar Facility in June 2009. Therefore, they were not included in prior audits.  
3. On 3/22/10, LRT Facility changed its standard from 25 to 40 and Central Warehouse from 40 to 80.



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**Exhibit V: Researchable Cycle Count Judgmental Sample -  
Reasons for Variances**

Stockroom	All Variances			Judgmental Sample: Reason For Variance										Total
	# of Var.	Variance Value		Reason Not Known	Not Charged Out/In	Error in Count	Found in Different Location	Found at Different Garage	Mis-keyed Entry	Used Incorrect Measure	Correct Prior Error	No Except Report	Misc.	
		Total	Av.											
Ruter Garage	54	3,758	70	9	10	5	2	3	0	0	3	0	0	32
East Metro	30	24,944	831	5	4	1	2	0	1	0	7	3	0	23
South Garage	23	1,227	53	4	4	3	1	0	0	0	3	2	1	18
Nicollet Garage	5	(114)	(23)	1	1	1	0	0	0	0	0	2	0	5
Heywood Garage	61	(222)	(4)	16	<b>17</b>	4	4	0	1	0	4	2	0	48
Cntrl Warehouse	198	(52,718)	(266)	<b>25</b>	7	<b>16</b>	<b>15</b>	<b>5</b>	1	<b>3</b>	<b>10</b>	3	1	86
Fare/Elec Repair	7	5,219	746	2	2	1	0	0	0	0	1	0	0	6
Body Shop	3	(188)	(63)	0	0	1	0	0	1	0	0	1	0	3
Brake Shop	6	99	17	0	2	1	0	0	0	0	1	1	1	6
Unit Overhaul	14	(4,802)	(343)	1	3	0	3	1	1	0	2	0	0	11
LRT Facility	11	6,518	593	4	0	1	2	0	0	0	4	0	0	11
Northstar	8	840	105	0	6	0	0	0	0	0	0	2	0	8
Rail Support Facility	5	695	139	1	2	0	1	0	0	1	0	0	0	5
	<b>425</b>	<b>(14,744)</b>	<b>(35)</b>	<b>68</b>	<b>58</b>	<b>34</b>	<b>30</b>	<b>9</b>	<b>5</b>	<b>4</b>	<b>35</b>	<b>16</b>	<b>3</b>	<b>262</b>

**Note:** Bolded numbers indicate the stockroom in which the greatest number of such variances was identified.

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**Exhibit VI: Researchable Cycle Count Judgmental Sample -  
Results by Calendar Quarter**

Stockroom	January - March 2011			April - June 2011			July - August 2011			September - December 2011			Total		
	# of	Variance Value		# of	Variance Value		# of	Variance Value		# of	Variance Value		# of	Variance Value	
	Var.	Total	Av.	Var.	Total	Av.	Var.	Total	Av.	Var.	Total	Av.	Var.	Total	Av.
Ruter Garage	20	131	7	10	2,423	242	9	108	12	15	1,096	73	54	3,758	70
East Metro	6	655	109	4	872	218	3	298	99	17	23,119	1,360	30	24,944	831
South Garage	15	1,230	82	2	(229)	(115)	0	0	0	6	226	38	23	1,227	53
Nicollet Garage	2	(124)	(62)	0	0	0	0	0	0	3	10	3	5	(114)	(23)
Heywood Garage	6	99	17	7	(1,253)	(179)	25	(322)	(13)	23	1,254	55	61	(222)	(4)
Cntrl Warehouse	51	(11,850)	(232)	25	(3,140)	(126)	62	13,134	212	60	(50,862)	(848)	198	(52,718)	(266)
Fare/Elec Repair	5	4,742	948	1	298	298	1	179	179	0	0	0	7	5,219	746
Body Shop	2	(324)	(162)	0	0	0	1	136	136	0	0	0	3	(188)	(63)
Brake Shop	0	0	0	1	(205)	(205)	2	56	28	3	248	83	6	99	17
Unit Overhaul	7	(4,359)	(623)	2	(1,473)	(737)	4	979	245	1	51	51	14	(4,802)	(343)
LRT Facility	1	(86)	(86)	3	158	53	5	651	130	2	5,795	2,898	11	6,518	593
Northstar	4	126	32	2	23	12	2	691	346	0	0	0	8	840	105
Rail Support Facility	0	0	0	0	0	0	0	0	0	5	695	139	5	695	139
	<b>119</b>	<b>(9,760)</b>	<b>(82)</b>	<b>57</b>	<b>(2,526)</b>	<b>(44)</b>	<b>114</b>	<b>15,910</b>	<b>\$140</b>	<b>135</b>	<b>(18,368)</b>	<b>(\$136)</b>	<b>425</b>	<b>(14,744)</b>	<b>(35)</b>

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**Exhibit VII: Variance Summary**

	<b>Audit Goal</b>	<b>South Garage</b>	<b>Ruter Garage</b>	<b>Unit Overhaul</b>	<b>Rail Support Facility</b>
<b>Variant Item Number Ratio</b>	5.00%	<b>2.76%</b>	<b>1.74%</b>	7.79%	<b>2.65%</b>
<b>Random Sample Net Variance</b>	1.00%	<b>-0.15%</b>	<b>0.11%</b>	<b>0.78%</b>	<b>0.01%</b>
<b>Random Sample Absolute Variance</b>	3.00%	<b>0.23%</b>	<b>0.14%</b>	<b>1.45%</b>	<b>0.07%</b>
<b>Random &amp; Judgmental Combined Net Variance</b>	1.00%	<b>-0.12%</b>	<b>0.08%</b>	<b>0.67%</b>	<b>0.01%</b>
<b>Random &amp; Judgmental Combined Absolute Variance</b>	3.00%	<b>0.17%</b>	<b>0.10%</b>	<b>1.25%</b>	<b>0.06%</b>

**Note:** **Bolded** items indicate variances meeting the Audit goal.

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**Exhibit VIII: Comparative Prior Audit Data**

	Audit	Audit Actual			Absolute	
	Goal (+ or -)	April 2008	April 2009	February 2012	% Point Change	% Change
<b>Unit Overhaul</b>						
Random Net Variance	1.00%	2.80%	N/A	<b>0.78%</b>	2.02%	72.14%
Random Absolute Variance	3.00%	10.05%	N/A	<b>1.45%</b>	8.60%	85.57%
Combined Random/Judgmental Net Variance	1.00%	2.36%	N/A	<b>0.67%</b>	1.69%	71.61%
Combined Random/Judgmental Absolute Variance	3.00%	8.49%	N/A	<b>1.25%</b>	7.24%	85.28%
Item # Variance	5.00%	19.44%	N/A	7.79%	11.65%	59.93%
<b>South Garage</b>						
Random Net Variance	1.00%	<b>-0.52%</b>	N/A	<b>-0.15%</b>	0.37%	71.15%
Random Absolute Variance	3.00%	<b>1.36%</b>	N/A	<b>0.23%</b>	1.13%	83.09%
Combined Random/Judgmental Net Variance	1.00%	<b>-0.78%</b>	N/A	<b>-0.12%</b>	0.66%	84.62%
Combined Random/Judgmental Absolute Variance	3.00%	<b>2.40%</b>	N/A	<b>0.17%</b>	2.23%	92.92%
Item # Variance	5.00%	9.94%	N/A	<b>2.76%</b>	7.18%	72.23%
<b>Ruter Garage</b>						
Random Net Variance	1.00%	N/A	1.30%	<b>0.11%</b>	1.19%	91.54%
Random Absolute Variance	3.00%	N/A	<b>1.74%</b>	<b>0.14%</b>	1.60%	91.95%
Combined Random/Judgmental Net Variance	1.00%	N/A	1.14%	<b>0.08%</b>	1.06%	92.98%
Combined Random/Judgmental Absolute Variance	3.00%	N/A	<b>1.51%</b>	<b>0.10%</b>	1.41%	93.38%
Item # Variance	5.00%	N/A	7.69%	<b>1.74%</b>	5.95%	77.37%

**Note:** Those measures falling within the Audit Goal are indicated in **Bold** type.