



**STAFF REPORT  
ACTION REQUIRED**  
with Confidential Attachments

**Internal Audit Activities – Quarterly Update: Q3 2017**

<b>Date:</b>	December 13, 2017
<b>To:</b>	TTC Audit and Risk Management Committee
<b>From:</b>	(Acting) Head of Internal Audit
<b>Reason for Confidential Information:</b>	This report involves the security of the property of the municipality or local board

**Summary**

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During the quarter, TTC's Internal Audit Department focused its efforts on completing the following key projects to facilitate the timely communication of observations and management action plans to the Audit and Risk Management Committee (ARMC).

- We reviewed the 3-year upset limit contract (\$2,280,000) for repairs of TTC's Scarborough Transit (SRT) *Linear Induction Motors (LIMs)* as part of our initiative to conduct contract reviews as a means of analyzing issues in depth, and supporting management's efforts to improve risk management over contract administration. While we concluded that Rail Cars & Shops (RCS) has reasonably effective controls in place to manage the contract and mitigate risks associated with LIM repairs, improvements need to be made by RCS to monitor spending and validate invoice pricing.
- In 2013, following a number of organizational changes that took place within the TTC in 2012, Internal Audit recommended that management integrate the use of video surveillance into other security, safety and privacy measures to ensure clear accountability and responsibility. Internal Audit included an assessment of the TTC's system-wide Use of Video Surveillance in its 2017 Internal Audit Plan. The results of our work have been summarized as a Confidential Attachment.
- As part of our 2017 Internal Audit Plan, we assessed the current state of affairs on tool management to support management's efforts to deter fraud and complement TTC's future Corporate Theft Awareness Campaign. The results of our fraud deterrent work have been summarized as a Confidential Attachment.

## **Recommendations**

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It is recommended that the TTC Audit and Risk Management Committee:

1. Receive Internal Audit Activities – Quarterly Update: Q3 2017 with the Contract Review: Repair of Linear Induction Motors attachment,
2. Receive the confidential information as set out in the confidential attachment on Use of Video Surveillance completed as part of Internal Audit Activities: Q3 2017, noting that it is to remain confidential in its entirety as it involves the security of the property of the municipality of local board, and
3. Receive the confidential information as set out in the confidential attachment on Fraud Deterrence: Tools Management completed as part of Internal Audit Activities: Q3 2017, noting that it is to remain confidential in its entirety as it involves the security of the property of the municipality or local board.

## **Financial Summary**

This report has no financial impact as the purpose is to report on TTC Internal Audit activities during Q3 2017.

## **Accessibility/Equity Matters**

There are no accessibility or equity issues associated with this report.

## **Comments**

TTC Internal Audit Department completed several key initiatives during the third quarter, made progress on a number of other assurance projects, and provided risk mitigation feedback to management on various topics based on observations made during discussions and internal governance committee meetings. Highlights for the quarter include the following:

### ***Completed Projects***

- As part of our initiative to conduct contract reviews as a means of analyzing issues in depth, and supporting management's efforts to improve risk management over contract administration, we identified a selection of active service contracts considered critical to meeting service delivery, and with upset limits between \$2 million to \$5 million to give focus to those contracts not requiring submission to the Board. This resulted in our selection of the 3-year contract procured to provide repairs of TTC's Scarborough Transit (SRT) *Linear Induction Motors (LIMs)* commencing August 28, 2015, with an authorized upset limit of \$2,280,000. Overall, we concluded that Rail Cars & Shops (RCS) has reasonably effective controls in place to manage the *LIM Repairs* contract and mitigate risks associated with LIM repairs. However, improvements need to be

made by RCS to monitor spending and validate invoice pricing to ensure continuity of contracts, adherence to contract terms and meaningful cost analysis that can serve as input into subsequent procurement cycles. See Attachment 1 for Internal Audit Report – Contract Review: Repair of Linear Induction Motors.

- We have reviewed TTC’s adherence to privacy legislation and implementation of recommendations to improve privacy practices put forth by the Information and Privacy Commissioner of Ontario (IPC) in the past and generally noted a satisfactory level of compliance. As part of our 2013 review, following a number of organizational changes that took place within the TTC in 2012, we recommended that management integrate the use of video surveillance with other security, safety and privacy measures to ensure clear accountability and responsibility. Also, risk management strategies that rely on the use of video surveillance must address system functionality, maintenance and performance activities, as well as, processes and controls for ensuring compliance with applicable legislation, operational policies and procedures, and practices put forth by the IPC. Hence, Internal Audit included an assessment of the TTC’s system-wide Use of Video Surveillance program in its 2017 Internal Audit Plan, and concluded that action is required to establish clear governance, risk management and controls over video surveillance and related activities.
- Tool replacement costs may not be considered material relative to other TTC expenditures, but the reputational damage caused when incidents of tool theft or waste are publicly reported can be significant. Further, the inability of workers to locate required tools, in good working condition, in a timely manner impacts their productivity. Internal Audit assessed the current state of affairs on tool management to support management’s efforts to deter fraud and concluded that risk mitigation strategies need to be reviewed and cost/benefit decisions made with respect to further addressing systemic controls gaps or accepting residual risks.

### ***In-Progress Projects***

- Many TTC workers gain access to track level during the day, afternoon or night to complete a variety of activities including planned maintenance work, track inspections, emergency repairs and training exercises. Safety risks for employees working at track level are particularly concerning given their exposure to making contact with revenue service trains, work-cars and the power rail. The scheduling of track access requests is particularly challenging given the small window of opportunity for completing work at night. Therefore, Internal Audit is reviewing risk management activities aimed at ensuring the limited time and space for track level work is utilized optimally and safely. Given the pervasive safety elements and considerations that need to be made, audit work will also indirectly provide insight into the current safety model where roles and responsibilities have been split between the corporate safety group and safety consultants embedded within the subway operations group.

- Surface vehicle collisions and on-board incidents can result in costly claims and lost time injuries. Unfavourable trends and severe incidents can trigger Ministry of Transportation investigations and orders for immediate remedial action. Ensuring operators are properly trained, fit for duty and attentive to their duties before and during their service shifts is a cornerstone for preventing collisions and on-board incidents. Comprehensive incident reporting, investigation and root cause analysis is also paramount to understanding contributory factors and determine what further actions may be taken to prevent accident re-occurrences. Management has implemented a number of programs (e.g., Safe Service Action Plan, Bus-Bus Collision Prevention Plan) in recent years and regularly reports on a number of key performance measures through the TTC internal governance Safety Committee and publicly via the CEO's report. Internal Audit is reviewing risk management activities designed to prevent surface collisions and/or mitigate the impact thereof. Audit work will also indirectly provide insight into the current safety model where roles and responsibilities have been split between the corporate safety group and safety consultants embedded within the surface delivery group.

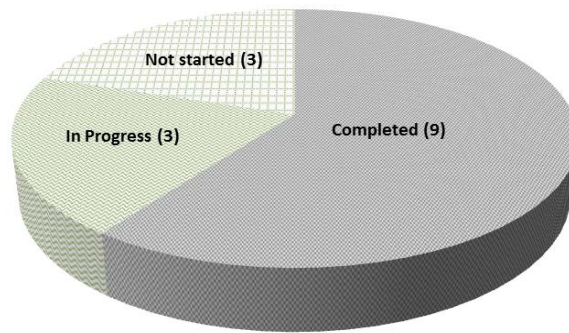
### ***On-Going Advisory Projects***

- Internal Audit monitors the activities of TTC's internal governance committees and other groups, with particular attention on the Risk & Governance Committee (RGX), Project Review Board (PRB) and the newly established Capital Project and Procurement Working Group; and attends meetings as required or when issues discussed are of relevance to our Work Plan. Internal Audit representatives also regularly discuss with senior TTC management topics covered at the PRESTO Joint Executive Committee (JEC), comprised of senior TTC and Metrolinx representatives, and PRESTO Audit Assurance Committee (PAAC).

### ***Departmental Initiatives***

- In our ongoing efforts to modernize and adopt best internal audit practices, we have initiated a detailed review of our risk assessment tools, assurance mapping techniques, documentation templates and communication protocols. We are also working with Human Resources staff to review all professional staff job descriptions and the department's organizational structure so as to address recruitment challenges and position ourselves to better serve the current and future risk-based assurance and advisory requirements of TTC senior management and the ARMC. Since TTC's internal audit resources are limited, opportunities to leverage work being completed by other internal/external service providers are being considered as part of our 2018 Internal Audit Strategy.

**Status of 2017 Audit Work Plan as at December 2017 – Assurance Projects**



Completed	In Progress	Not started
Workforce Planning: Bus Operators (Education Session)	Employee Safety: Subway Track & Tunnel Work* (Subway Track Access Management)	Asset Management: Subway Infrastructure
Asset Management: Subway Rolling Stock – T1 Hot Cars	Surface Collisions & On-Board Incidents <sup>#</sup>	Project Assurance: Major Project Universe Risk Stratification & Review of Select Projects**
Fraud Deterrence: Lost Articles Office	Safety Delivery Model* <sup>#</sup>	Asset Management: Streetcar Way Infrastructure
Fraud Deterrence: Metals Management		
PRESTO Device Monitoring		
Use of Consultant Staff		
Use of Video Surveillance		
Fraud Deterrence: Tools Management (Follow-Up)		
Review of Select Contract - Repair of Linear Induction Motors		

- \* Risks relating to employees accessing track level to conduct maintenance and other activities during revenue and non-revenue service hours being assessed through the audit of Employee Safety: Subway Track & Tunnel Work (Subway Track Access Management), and indirectly assessing the risks associated with the current safety model where roles and responsibilities have been split between the corporate safety group and safety consultants embedded within the subway operations group (Safety Delivery Model);
- # Risks related to customers’ and employees’ safety at surface level addressed through the audit of Surface Collisions and On-Board Incidents, and indirectly assessing the risks associated with the current safety model where roles and responsibilities have been split between the corporate safety group and safety consultants embedded within the subway operations group (Safety Delivery Model);
- \*\* Deferred as TTC’s Portfolio Management Office is developing a Project Management Framework, standards and review methodologies in consultation with KPMG and other third party consultant service providers to set oversight expectations for projects.

**Contact**

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**Attachments**

- 1) Attachment – Contract Review: Linear Induction Motor Repairs
- 2) Confidential Attachment – Use of Video Surveillance
- 3) Confidential Attachment – Fraud Deterrence: Tools Management

# Internal Audit Report – Contract Review: Repair of Linear Induction Motors

## EXECUTIVE SUMMARY

### Purpose of Audit

Past audits performed by Internal Audit (IA) and the Auditor General of the City of Toronto Office found weaknesses in 'upset limit contract' payment processing controls causing overpayments and payment errors due to poor segregation of duties and limited oversight being exercised by user departments. Hence, IA has initiated continuous contract control reviews as a means of analyzing issues in depth, and supporting management efforts to improve risk management of contract administration, as identified in its 2017 Audit Work Plan.

We identified a selection of active service contracts, critical to meeting service delivery, with upset limits between \$2 million to \$5 million to give focus to those contracts not requiring submission to the Board. This report presents our observations of the audit of the 3-year contract procured to provide repairs of TTC's Scarborough Rapid Transit (SRT) *Linear Induction Motors (LIMs)* commencing August 28, 2015, with an authorized upset limit of \$2,280,000.

### Overall Conclusion

We concluded that Rail Cars & Shops (RCS) has effective contract management controls in place to manage the contract for SRT LIM Repairs. These include controls and risk mitigation activities to ensure:

- SRT LIM repairs are performed by only pre-qualified service providers
- detailed technical specifications, repair standards and response protocols are identified in the contract and being followed
- service level expectations are met via regular supplier interaction

However, as in the case of prior audits in other operational areas, further improvements should be made by RCS to monitor spending and validate invoice pricing to ensure continuity of contracts, adherence to contract terms and meaningful cost analysis that can serve as input into subsequent procurement cycles.

### Background

Linear Induction Motors are critical assets that power the TTC's SRT trains. They require timely repair to maintain SRT service levels. They are susceptible to mechanical damage due to debris collecting between the LIM and the reaction rail, improper reaction rail height, and improper alignment of the LIM. LIM repairs are considered to be a specialty service. TTC currently has two approved, qualified suppliers for the repair of LIMs and Vehicle Maintenance Engineering within RCS is evaluating the eligibility of a third.

The overall reliability of a LIM is measured as 'Mean Time In Service' (MTIS). MTIS has increased from 1.3 years (measured for the period 1989 - 2017) to 2.5 years (measured for the period 2013 - 2017<sup>1</sup>). In early 2015, numerous LIM failures triggered engineering analysis to identify root causes and implement a system of checks and balances to both the maintenance of track and repair of LIMs to prevent reoccurrence. The SRT had been scheduled for complete shut-down and de-commissioning in July 2015 following the Pan Am games, but subsequent direction was given to extend the SRT service for 10 more years (while a Scarborough subway extension was being built). This was a key driver in the going forward management of LIMs.

Noted improvements in LIM reliability are attributable to the instrumented tests that document the height of the reaction rail. Prior to these tests, Subway Infrastructure (SI) had no reliable, accurate information as to the rail height. If too high, the rail would come into contact with the LIM, damaging them or shortening their lifespan. Now, SI is able to respond proactively to test results and adjust the reaction rail height in a timely manner, drastically reducing the number of LIM/reaction rail contacts. Further, RCS now uses a new type of testing device with which all employees have been familiarized and has aided in the reduction of unnecessary replacement of LIMs.

### **Audit Objective and Scope**

The objective of this audit was to provide reasonable assurance over the adequacy and effectiveness of contract management controls being exercised over the Repair of LIMs contract by RCS.

We focused on assessing controls that ensure:

- LIM repair services required to meet SRT service levels continue and are delivered by qualified suppliers
- Proper payment processing

Therefore, the scope of the audit included a review of contract management processes and risk mitigation activities within RCS to ensure compliance with contract terms and conditions, service level performance monitoring, supplier relationship management, and invoice processing. While we reviewed contract files maintained in Materials and Procurement (M&P) for bid analysis and documented terms and conditions, we did not audit M&P's competitive procurement processes for this contract.

### **Summary of Key Outcomes**

Based on discussion and review of Internal Audit's observations, Executive Management has been made aware of its need to:

- Continue with its efforts to effectively manage LIM Repair Services and minimize vulnerabilities by diversifying and seeking to increase the number of pre-qualified vendors for this specialized service. Materials & Procurement (M&P) staff have been made aware of current steps typically taken to identify and pre-qualify vendors, and indicated they will ensure the process is reviewed as part of its best practices review.

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<sup>1</sup> Note: a longer period is required for the MTIS calculation and hence periods 2013-2015 outside the contract have been included.



## **Attachment (1)**

- To work with M&P staff to ensure a copy of all contracts for which operations management is responsible for managing is readily available and reviewed, and notification of expiration of contracts prompts appropriate action in a timely manner.
- Communicate its expectation to operations management that proper controls must be exercised to enforce adherence to all contract terms, monitor actual spending and facilitate meaningful cost analysis that can serve as input into subsequent procurement cycles.

Management Action Plans (MAPs) to address Internal Audit's observations and identified risk/control gaps have been prepared and can be found in the attached – Detailed Discussion.

## DETAILED DISCUSSION

***Audit Observation #1: LIM repair services effectively managed by RCS***

RCS ensures that LIMs are repaired by qualified repair suppliers. The Vehicle Maintenance Engineering Section within RCS has informed Internal Audit that the Section pre-qualifies suppliers using a thorough evaluation process. Detailed technical specifications outline the testing protocols and processes to ensure repair services are provided.

For example, if a removed LIM is under warranty, it is to be jointly inspected with the vendor on TTC property to ensure agreement as to the identified failure mode and warranty repairs required. If not under warranty, the removed LIM is to be inspected by in-house engineer technicians to confirm the failures before they are shipped out for repair. RCS management explained that the purpose of this process is to confirm parts have failed and facilitate proper failure diagnostics.

Turnaround times and warranty terms are specified and adequately tracked to ensure justifiable warranties are claimed. E-mails that evidence routine on-going supplier interaction and the development and maintenance of working relationships by RCS with vendors were noted. The volume of repairs invoiced to date under the new contract has dropped by 68%, validating the overall improvement in LIM performance represented by management.

***Audit Observation #2: Contract expiry missed, leading to repair services with***

Seventeen LIMs were repaired at an approximate cost of \$660K without a contract in place between January 1, 2015, and May 7, 2015, requiring CEO post-approval. An unforeseeable spike in LIM failures caused a higher repair rate than anticipated, and so the authorized upset limit of \$987,000 of the previous LIMs repair contract (PU140366) was prematurely exhausted in December 2014, before the contract end of term (January 31, 2015).

RCS missed Material & Procurement's (M&P's) routine periodic notification to the Head of the Department of upcoming contract expirations. Further, RCS did not have a copy of the contract and had not been monitoring actual spending trends of LIM repairs, and so was unaware of the lapse and shortage of unauthorized funding until payments were flagged by Accounts Payable. Consequently, RCS did not anticipate the need and initiate re-tendering in time.

In the absence of a contractual obligation, service suppliers cannot be held accountable to provide timely repairs to the specifications required. This can negatively impact SRT service levels.

***Audit Observation #2 – MAP: To ensure continuity of service contracts***

- RCS will implement a formal process to check contracts on a periodic basis and focus more on monitoring actual spending to ensure sufficient purchasing authority remains to cover services required.

## Attachment (1)

- RCS management will check the periodic listing of expiring contracts and notify M&P sufficiently in advance to re-tender contracts as required. M&P now has a listing of expiring contracts available on the intranet that can be monitored periodically.

**Target Completion Date:** December 31, 2017

**Accountability/Responsibility:** Harpreet Nagi, Head – RCS  
Matt Brown, Manager – Rail Vehicle

***Audit Observation #3: Supplier not providing itemized repair pricing to***

Invoice pricing for LIM repairs could not be verified due to a lack of itemized pricing. The supplier charged lump sum totals contrary to the contract. A detailed breakdown of actual labor and material costs is necessary to validate pricing and serve as meaningful input into the next procurement cycle.

Further, RCS is unable to confirm whether scrap credits as per the contract have been applied. RCS estimates the scrap copper credit per LIM could be approximately \$900 per LIM, or approximately 2% of total invoiced amounts to date.

Total LIM repair costs under the new contract were expected to be approximately 33% lower than the previous contract per the tender and award Commercial Analysis. However, the actual average repair cost per LIM is only 3% lower than the average repair cost under the previous contract (i.e. \$41,237 vs \$42,509 per LIM).

***Audit Observation #3 – MAP: To ensure invoices are paid according to the contract terms and prices.***

- RCS will enforce the contract and require the supplier to provide detailed itemized pricing for Repair Estimate Sheets and invoices.
- RCS will identify the need to include a scrap copper credit estimate as a separate line in the Repair Estimate Sheet.
- RCS will provide staff responsible for verifying invoicing with a copy of the contract that includes relevant contract terms and conditions.

**Target Completion Date:** December 31, 2017

**Accountability/Responsibility:** Harpreet Nagi, Head – RCS  
Matt Brown, Manager – Rail Vehicle