

# TTC AUDIT COMMITTEE REPORT NO.

**MEETING DATE:** July 14, 2009

**SUBJECT:** INTERNAL AUDIT REPORT – S/E/C – ELECTRICAL/ELECTRICAL  
ENGINEERING/PRACTICES AND PROCEDURES

## INFORMATION ITEM

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### RECOMMENDATION

It is recommended that the Audit Committee receive for information the attached Internal Audit Report.

### BACKGROUND

Internal Audit provides the Commission with independent evaluations of the efficiency and effectiveness of control systems, and operations. Internal Audit is also required to provide recommendations for improvement.

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Richard G. Beecroft  
Chief Auditor

July 14, 2009  
01-23

Attachment - Internal Audit Report

**OPERATIONS BRANCH  
RAIL OPERATIONS**

**SIGNALS/ELECTRICAL/COMMUNICATIONS DEPARTMENT**

**ELECTRICAL – TRACTION POWER  
ELECTRICAL – WIRING AND SERVICE  
ELECTRICAL ENGINEERING  
PRACTICES AND PROCEDURES**

**Covering Period:  
January 2007 to July 2008**

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## EXECUTIVE SUMMARY

This audit assessed the key management and operational controls of the Traction Power, Wiring and Service, Electrical Engineering and Practices and Procedures areas of the Signals/Electrical/Communications Department. An Exit meeting was held on April 7, 2009 with the General Manager – Operations Branch, Deputy General Manager – Rail, and the General Superintendent – Signals/Electrical/Communications Department to discuss the findings.

Audit found that, in general, the Electrical areas have a strong management team to oversee the area and maintain good controls. However, Audit identified areas which required strengthening of the existing controls to minimize risk exposures.

Recommendations were made to update the tool and equipment asset listings to ensure that assets are identified and recorded in order to prevent loss, and provide a basis to track the calibrating of the tools and equipment against established schedules and manufacturers' requirements. Management agrees with Audit's recommendation and is implementing action to verify the accuracy of the tool and equipment inventory listings by the end of September 2009. In addition, Management will use the updated inventory listings to establish the calibration requirements and scheduling for the assets.

Audit also recommended that documentation for the completion of work activities needed to be improved, along with better storage and retention guidelines. Management agrees that improved documentation is required to support the work activities performed. The preventive maintenance frequencies for the electrical equipment will be reviewed by Management, and documented to ensure that maintenance work is completed in accordance with legislative requirements, where applicable, and industry "best practices." Action will be implemented to ensure that by the end of 2009, record retention and destruction of files is in accordance with TTC's requirements, and all work documentation is properly filed, stored and available when needed.

Other areas identified for improvement in controls were contract administration activities, such as, evidence of signing for receipt of goods and services, and completeness of information on order forms and fuel card purchase receipts. Management has agreed to strengthen controls through improved documentation by evidence of supervisory approvals; in addition, delegation of signing authorities will be reviewed to streamline the approval process in order to provide stronger Departmental accountability over expenditures.

We wish to express our thanks for the cooperation and assistance from all parties during the course of the Audit.

*Joe Kennelly*

R.G. Beecroft  
Chief Auditor

Joseph L. Kennelly  
Audit Manager

## FOREWORD

The audit of the Signals/Electrical/Communications (S/E/C) Department covered the electrical activities for four of the Department's seven major responsibility areas. The responsibilities for each of the audited areas are:

- Traction Power is responsible for maintaining in a state of good repair the traction power distribution system which provides the electrical power to move the subway trains and streetcars.
- Wiring and Service is responsible for the maintenance, repair and overhaul of the electrical systems providing power for lighting, heating, ventilation, escalators and elevators for the various subway and surface facilities.
- Electrical Engineering is responsible for providing technical and engineering support to the electrical maintenance staff and other departments, as required.
- Practices and Procedures is responsible for managing the creation, revision, distribution, tracking, and storage of procedures and related information needed to support the Department's activities.

In addition, Traction Power, Wiring and Service, and Electrical Engineering are also responsible for the replacement of electrical systems as part of the Capital Works Program.

## AUDIT SCOPE AND OBJECTIVES

**Scope** The audit included a review of key management, operational, administrative and financial controls of the Electrical areas within the S/E/C Department for the period January 2007 to July 2008.

**Objectives** To assess the management and operational controls to ensure:

- accountability and reporting relationships are appropriate for the Commission
- due regard for economy, efficiency, and effectiveness
- procedures and processes are in place to measure and report on electrical activities

To evaluate the adequacy of financial controls to ensure:

- compliance to Legislative and Commission requirements
- the timeliness, accuracy, completeness, and authorization of transactions
- the safeguarding and control of assets and other information

**AUDITED ITEMS FOUND ACCEPTABLE**

KEY CONTROL	FINDING
Occupational Health and Safety	Joint Health and Safety Committee meetings are held regularly to discuss and resolve deficiencies and concerns; minutes of the Committee meetings are on file.
Hazard Identification and Risk Assessment (HIRA)	Approved HIRA's are on file to identify and assess work hazards. Management has also implemented a hazard assessment program on a job/project specific basis. Prior to starting a job or project, specific hazards that can be encountered are reviewed with the work crew and the safety protection needed to do the work is identified.
Overhead	Work Methods for the overhead electrical system have been input to MAXIMO for the scheduling and monitoring of inspections, emergency, capital project and other related maintenance activities.
Electrical Engineering	Electrical engineering support services are effectively provided.
Energy Management	An energy management process has been initiated to develop strategies for the reduction of energy costs in the future.
Security Access to Buildings and Electrical Equipment	Substation doors are locked and protected with a Substation Security System. Records of all entry and exit from the substations are maintained, including the date, time, name, badge number and purpose of entry. At other TTC locations, electrical equipment is secured behind locked doors in subway stations and/or surface facilities.

(Continued)

**AUDITED ITEMS FOUND ACCEPTABLE (Continued)**

Payroll and Attendance	Union and staff attendance records are maintained; and, administration of overtime, lieu-time and vacation complies with TTC policy.
Apprenticeship Training	An Apprenticeship Training program has been implemented to improve the knowledge skills of new apprentices to the Department, and feedback from union employees on its effectiveness has been positive.

## AUDITED ITEMS FOUND UNACCEPTABLE

### FINDING #1

#### PREVIOUS AUDIT ISSUES

**OBJECTIVE:** To follow-up on the status of the previous audit findings and recommendations.

**ANALYSIS:** Tool and Equipment Asset Controls  
In the previous audit, "Electrical Section" dated February 2005, the lack of effective controls for tool and equipment assets was identified. Management's response indicated that improved monitoring controls would be implemented through the use of the MAXIMO computer application; however, interim measures to mitigate the identified risks have not been implemented. Audit found that the existing asset listings were outdated, and operational procedures for calibration of tools and equipment were not effective.

Fuel Credit Card Purchases

The previous special audit "Review of TTC Fuel Management" dated August, 2004 recommended improved controls for monitoring the use of Fuel Credit Cards.

Audit's review noted that the Traction Power area implemented the Esso Speedpass key tag (FOB) Program starting April 2008. The program is designed to improve monitoring over fuel usage by providing more detailed reporting. A review of the Speedpass Report noted that the calculation of average litres per 100 kilometers and cost per kilometer are inaccurate as the vehicle drivers do not always input the correct vehicle odometer reading. Two vehicles were refueled using the same FOB within a 6 minute span; contrary to system contract procedure, there was no evidence that the incident was reported or investigated.

Review of the Wiring and Service area showed that fuel receipts lack information such as, signature and badge number, odometer reading and vehicle number, which is required by the Esso Fuel Card procedures. Also, fuel receipts are not reconciled to the monthly invoice prior to approval.

**RECOMMENDATIONS:** Management should ensure that:

- inventory controls are strengthened over electrical tool and equipment assets, and inventory lists are updated and periodically verified to avoid financial loss of TTC assets
- calibration procedures are effective to ensure equipment safety and measurement accuracy
- effective controls are implemented for the monitoring of Fuel Credit Card purchases

**MANAGEMENT RESPONSE:**

**Tool and Equipment Asset Controls**

- We acknowledge that tool and equipment inventories are outdated. In order to ensure that tool and equipment assets are protected from loss, inventory lists will be updated and verified by September 30, 2009.
- There is currently a system contract in place for calibration in SEC. As part of the inventory update we will prepare a list of equipment requiring calibration. We anticipate that the existing calibration contract will meet the Department's calibration requirements. This will also be completed by September 30, 2009.

**Responsibility:**

The Superintendent – Traction Power and Superintendent – Electrical will be responsible to ensure that the inventory is updated annually by the September 30<sup>th</sup> anniversary, and that equipment requiring calibration will be scheduled and calibrated, as required.

**Status:** September 30, 2009

**Fuel Credit Card Purchases**

- Controls over the monitoring and use of Fuel Credit Card purchases will be improved. Employees will be reminded at monthly safety meetings about the importance of ensuring all required information is provided on the fuel receipts.
- Clerical staff will monitor receipts and, as part of the monthly reconciliation process, will notify the appropriate foreperson or supervisor of any noncompliance for follow-up.
- There are a number of advantages to the ESSO Speed Pass (FOB) over the gas fuel credit card system. Therefore, to improve controls over fuel purchases by Wiring and Service, a request will be made to the Materials and Procurement Department (M&P) to extend

the FOB system used in Overhead to them. This should result in better monitoring of purchases and accuracy in recording in required information.

- In reference to the two vehicles refueled using the same FOB within a 6 minute span, this incident was investigated and it was discovered that the incident occurred on April 29, 2008 where one of our trucks was in for repair and we received a loaner vehicle from Lakeshore Garage. The loaner vehicle does not come with a specific FOB. A driver used the same FOB to fuel the regular vehicle and the loaner vehicle.

**Responsibility:**

General Superintendent – Signals/Electrical/Communications Department will discuss with the Materials and Procurement (M&P) Department the need to extend the FOB system to the Wiring and Service area.

**Status:** Discussions with M&P will be held by September 30, 2009, and implementation of the FOB system for the Wiring and Service area will be scheduled for completion by December 31, 2009.

## FINDING #2

### DOCUMENTATION OF WORK ACTIVITIES

**OBJECTIVE:** To determine that inspections, emergency maintenance and capital works are performed and adequately documented for substations and subway electrical equipment, related structures, and surface electrical installations.

**ANALYSIS:** Audit's examination of the supporting documentation for work activities performed found weaknesses. The following opportunities for improvements were identified:

- Review of existing records management practices determined that records and files are generally kept on site as space permits, and destroyed only when necessary. Maintenance records, such as inspection forms and checklists are not centrally filed, as they are frequently left at electrical zone rooms, remote surface facility locations, and in vehicles. A review of the maintenance files stored at the supervisors' offices found omissions and gaps in records that could not be explained.
- In Wiring and Service, maintenance frequencies could not be verified due to the lack of appropriate records, and the maintenance records that do exist did not adequately reference the work methods performed. In Substations, review of the "All Substations Work Methods" control spreadsheet showed that not all substations have documented Work Methods. In addition, the approval and justification for changes to maintenance frequencies are not sufficiently documented to support the frequency selection.
- Work methods to be performed as part of the preventive maintenance program have not been identified for the Sheppard Line, and are outdated for the subway yards.
- Follow-up of work performed to correct problems identified during the regular preventive and maintenance inspections are not always documented on the work order and/or checklist which reported the problem. Many of the maintenance records (e.g., overhead door inspections at subway yards, ladder inspections, pre-trip inspection sheets, and Commercial Vehicle Inspection Reports) require supervisory review and approval; however, evidence is lacking to indicate that adequate supervision is maintained.

The lack of sufficient documentation for the work activities performed increases the risk that work may not be completed as required, or is not in compliance with TTC's requirements and expected standards.

**RECOMMENDATIONS:** Management should ensure that controls are in place for the documenting of inspection and maintenance work performed

In particular, Management should:

- develop maintenance schedules in accordance with required maintenance frequencies, and where deviations from requirements are made, the justification decision to accept risks is documented
- ensure that work methods are complete and documented
- ensure that the follow-up of outstanding work actions assigned and the resolution of reported problems are sufficiently documented to support the action taken or work completed
- improve records management and filing practices in accordance with TTC guidelines

**MANAGEMENT RESPONSE:**

- Maintenance frequencies are currently under review to ensure legislative compliance and/or "best practices". Updating of the maintenance frequencies will be documented as part of the 2010 budget cycle. Performance measures will be developed to measure any deviation from the recommended maintenance intervals and the reason for such deviation will be documented as part of the department DPR process.
- Work methods and SOP's are constantly in development. There are a significant number of work methods and SOP's in the queue awaiting preparation or updates. Current department targets are to prepare 50 new and update 20 SOP's per year. We review the queue annually to determine priorities for update and preparation.
- Overhead has implemented a MAXIMO procedure to report 'follow up work' identified during Preventive Maintenance work. Supervisory personnel are responsible to assign 'follow up' work orders that document: number of failures, work done, work outstanding and failure reporting by problem, cause and remedy. The Overhead Section 'follow up' work model will be used throughout S/E/C's Electrical Sections implementation of the MAXIMO Preventive Maintenance program.

- Due to space restrictions at Keele (HQ for Subway W&S) and Asquith substation (HQ for SSPC), generally maintenance files are stored locally for these sections. Overhead and Surface Wiring keep centralized maintenance records at Hillcrest. Each section has document retention guidelines. However, we will ensure that record retention and destruction of files will be in accordance with Commission policy.

**Responsibility:** General Superintendent – Signals/Electrical/Communications

**Status:** December 31, 2009

## FINDING #3

### CONTRACT ADMINISTRATION

**OBJECTIVE:** To assess the adequacy of administrative controls in place for the system contract activities.

**ANALYSIS:** Audit's review of the system contract administration controls indicated the following control weaknesses:

#### System Contracts

- Order Forms were not always completed with full information included, such as, signatures, badge numbers, and pricing information; and, unused lines were not crossed out.
- Packing slips were not always signed or initialed for evidence of receipt of materials.
- The use of e-mail to place orders, rather than by faxing as per TTC requirements does not provide documented evidence of the approval signatures, and suppliers do not always reply to confirm the order and pricing. There is a risk that errors in shipping quantities and/or pricing could occur without immediate detection.
- Reconciliation of the invoices and checking for clerical accuracy of unit prices and discounts was not performed consistently for all contracts.

#### Signing Authorities

- Audit noted that the Department has 51 listed purchasing cardholders. While average monthly purchases per card are less than \$1,000, current Purchasing Card guidelines require Department Head approval for the expenditures. Due to the high number of cardholders in the Department an increasing amount of time can be spent in the review and signing of purchasing card receipts and approval for payment.

**RECOMMENDATIONS:** Management should:

- ensure that contract administration controls are effective to provide evidence of receipt of goods and/or services, i.e., signatures should be noted on packing slips, and accountability for ordering documented
- review appropriateness of signing authority levels, and revise and/or update delegation of authority, where necessary

**MANAGEMENT RESPONSE:**

- We have reviewed our procedures and will reinforce the requirement to have appropriate administration controls. We will discontinue e-mail orders.
- General Superintendent – SEC will request a review of Purchasing Card guidelines with a recommendation that signing authority for less than \$1000 per month be delegated to the appropriate Superintendent.

**Responsibility:** General Superintendent – Signals/Electrical/Communications

**Status:** September 30, 2009