TTC AUDIT COMMITTEE
REPORT NO.

MEETING DATE: January 23, 2011

SUBJECT: INTERNAL AUDIT – BUS MAINTENANCE DEPARTMENT – DUNCAN SHOP AND FLEET MANAGEMENT

INFORMATION ITEM

RECOMMENDATION

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

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Richard G. Beecroft
Chief Auditor

January 23, 2011
01-23

Attachment – Internal Audit Report

OPERATIONS BRANCH

BUS OPERATIONS

BUS MAINTENANCE DEPARTMENT

DUNCAN SHOP
AND
FLEET MANAGEMENT

Covering Period:
January 2009 to April 2010

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This audit assessed the key management and operational controls of the Duncan Shop and Fleet Management sections within the Bus Maintenance Department. An Exit meeting was held on March 29, 2011 with the (Acting) General Manager – Operations Branch, (Acting) Deputy General Manager – Bus, and the General Superintendent – Bus Maintenance Department to discuss the audit findings.

The approved 2011 budget for the sections is outlined below:

CATEGORY	DUNCAN SHOP			FLEET MANAGEMENT		
	Labour ($)	Material ($)	Total ($)	Labour ($)	Material ($)	Total ($)
Operating	19,919,100	19,799,300	39,718,400	318,900	560,200	879,100
Capital	1,421,700	3,251,900	4,673,600	79,100	0	79,100
Wheel-Trans	47,600	219,600	267,200	0	0	0
Miscellaneous	0	0	0	0	896,500	896,500
TOTAL ($)	21,388,400	23,270,800	44,659,200	398,000	1,456,700	1,854,700

The approved employee positions for the sections for 2011 are as follows:

EMPLOYEE POSITIONS	DUNCAN SHOP			FLEET MANAGEMENT		
	Operating (#)	Capital (#)	Total (#)	Operating (#)	Capital (#)	Total (#)
Management/Supervisory	28	4	32	3	1	4
Clerical	3		3			
Hourly	234	59	293			
TOTAL (#)	265	63	328	3	1	4

Audit found that the areas are generally well managed and controls are in place. However, Audit identified several areas which required strengthening of the existing controls to minimize risk exposures and costs.

Audit recommended that a consistent methodology is used to calculate bus mileage which is used to determine the timing of bus maintenance inspection activities, and an effective accountability and responsibility framework be developed for managing the Special Work Instruction Sheets (SWIS) work program for Operating projects. Management agrees with the recommendations and corrective action has been implemented to strengthen controls.

Other recommendations related to the process for communicating follow-ups on overdue inspections of non-revenue vehicles and equipment to improve the adherence to the inspection schedules, and periodically verifying the physical tool assets against the tool inventory database for accuracy and completeness. Management agrees with the recommendations, and action has been taken to implement improved controls in these areas.

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

R.G. Beecroft   J.L. Kennelly
Chief Auditor   Audit Manager

FOREWORD

Duncan Shop and Fleet Management are two sections within the Bus Maintenance Department. The sections provide heavy maintenance for the bus fleet, and maintain the non-revenue fleet. The major activities of these sections are to:

- provide rebuilt components to meet the requirements of the garages and shops
- repair or overhaul TTC vehicles and equipment
- rebuild damaged or aging revenue vehicles for extended service
- maintain a fleet of non-revenue heavy duty vehicles and equipment for all TTC departments

AUDIT SCOPE AND OBJECTIVES

Scope   The audit included a review of key management, operational, administrative and financial controls of the Duncan Shop and Fleet Management areas within the Bus Maintenance Department for the period January 2009 to April 2010.

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 the Sections' 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
Payroll and Attendance	Payrolls, including overtime and lieu time, are correctly processed for union and staff employees in accordance with TTC's requirements.
Occupational Health and Safety	Occupational Health and Safety meetings are held and results of discussions are documented. Outstanding issues are followed-up and action is taken, as required.
Hazard and Risk Identification (HIRA)	Completed HIRA's are on file and approved.
Purchasing and Expenditures	Purchases are monitored and controlled. Controls are in place over receipt of goods and/or services, approval and payment is in accordance with TTC requirements. Purchasing card usage complies with the Purchasing Card Guidelines.
Signing Authorities	Signing authorities are documented, updated and circulated.
Tire Operations	The monitoring and scheduling of tire operations is effective; tire repairs are performed as scheduled.
Contract Administration – Diesel Fuel Contract	Controls are in place to ensure compliance with the diesel fuel contract and TTC procedures.

AUDITED ITEMS FOUND UNACCEPTABLE

FINDING #1

MANAGEMENT INFORMATION SYSTEM

OBJECTIVE: To determine that the management information systems in place provide accurate, timely and useful information for management decision-making purposes.

ANALYSIS: The Department relies upon the VMS (Vehicle Maintenance System) to provide accurate data on bus maintenance activities, i.e., reporting mean miles between brake relines, establishing mileage based inspections, and input for budget costing purposes.

Audit's review and discussions with Management determined that the process to maintain accuracy and integrity of the VMS data requires improvement. Mileage calculations which are determined by the CIS (Communication and Information System) and used as input into the VMS for the bus fleet are inaccurate. Discrepancies were noted, such as buses with zero or negative mileage recorded, or more than 600 miles recorded for the day which would be unreasonable.

The lack of accurate mileage calculations can result in inefficient scheduling of maintenance and inspection work, and budgeting errors.

RECOMMENDATION: Management should ensure that consistent methodology is used by the CIS and VMS to calculate bus mileage.

**MANAGEMENT
RESPONSE:** The current CIS / VMS mileage process was implemented around 2001 in an effort to improve accuracy and timeliness of mileage collection into VMS.

Bus Maintenance primarily uses VMS mileage for scheduling mileage based preventative maintenance activities. Mileage-based preventative maintenance activities (i.e. service checks, fluid replacements, tune-ups, etc.), along with date-based preventative maintenance activities (i.e. MTO's, semi-annual inspections, fall/spring checks, annual brake inspections, etc.) are used to ensure buses made available for service are

maintained in a safe and reliable condition. Additionally, VMS mileage is / can also be used for completing performance reports (i.e. Mean Miles Between Brake Relines, Mean Miles Between Delays, etc.) and cost analysis (i.e. costs per mile).

Despite the improvements that were achieved with the CIS / VMS process, accuracy issues can still occur given the limitations of the equipment, systems and processes. The inaccuracies could generally be categorized under two main groupings: "batch" issues and individual bus issues. "Batch" issues can occur when something goes wrong prior to the transfer of large quantities of data and the mileage reported in VMS for numerous buses is affected. Occurrences of CIS / VMS "batch" errors are rare as there are business rules embedded in the software to minimize this type of situation but they can still occur from time-to-time. Inaccuracies related to individual buses can occur as a result of equipment issues on individual buses (i.e. faulty odometer, improperly set CIS equipment, cable issues, etc.). Again, business rules are embedded in the software to minimize inaccuracies associated with these situations. Additionally, reports are generated to Bus Maintenance staff regarding equipment related issues for follow-up.

During the course of audit review, the audit team observed Fleet Management staff investigating mileage inaccuracies associated with a "batch" issue. The examples reported in the audit report (i.e. buses with negative mileage, buses with excessive mileage) are representative of what fleet management discovered at the time. The batch issue resulted in some buses being called in early for inspection (i.e. as much as a few hundred miles) while other buses were called in late for inspections (i.e. as much as a few hundred miles). The inaccurate calling of buses was a one-time occurrence for this specific incident and no further action was required.

The Bus Maintenance and Information Technology Department initiated a Working Group to review the existing mileage collection process and business rules applied by the system. The group is working on implementing improved processes to strengthen the existing data processing and analysis for the purpose of further improving mileage accuracy.

The CIS has recently been upgraded to make use of the GPS (Global Positioning System) equipment that was previously installed on buses as part of the Automated Stop Announcement System. This upgrade provides more accurate and reliable information for bus location and introduces the

ability for off route tracking. The Bus Maintenance and Information Technology Departments' Working Group will examine the possibility of using the on board GPS to improve mileage granularity, and to ensure improved accuracy and more reliable mileage data is used for vehicle maintenance intervals and budgeting purposes.

Responsibility: Bus Maintenance / Information Technology Department

Status: Completed

FINDING #2

SPECIAL WORK INSTRUCTION SHEETS (SWIS)

OBJECTIVE: To determine that adequate control processes are in place to ensure effective use of resources within the Department.

ANALYSIS: SWIS work generally includes improvements and new equipment modifications which are added to the existing bus fleet. SWIS work requests can originate from a variety of sources and justifications.

Audit noted control weaknesses in the SWIS Operating work program. For example, Capital SWIS activities have an assigned project manager and detailed work plans, schedules and tracking of completed work for each bus. However, for SWIS Operating projects there is no formalized process for assigning responsibility, priorities, resources, quality assurance, and tracking.

While the Technical Support Services area initiates the process, the organizational structure and accountability framework are not identified. There is no centralized individual managing the program and no clear indication as to who is responsible for ensuring its successful completion.

RECOMMENDATION: Management should implement an effective accountability and responsibility framework for managing SWIS Operating projects.

MANAGEMENT RESPONSE: Operating and Capital SWIS are now managed by the same processes. Operating SWIS responsibilities are shared between two Bus Maintenance groups, Technical Support Services (TSS) and Duncan Shop. TSS is the Project Manager responsible for completing the detailed work plans (SWIS work sheets) and prioritizing the work. Duncan Shop is responsible for scheduling, tracking, applying labour resources and maintaining costs within budget.

Responsibility: TSS / Duncan Shop

Status: Completed

FINDING #3

NON-REVENUE VEHICLES

OBJECTIVE: To determine that maintenance plans for major and minor inspections are carried out in accordance with TTC requirements.

ANALYSIS: A comprehensive preventive maintenance program is in place which requires non-revenue vehicles to have major and minor inspections at pre-set dates during the year. The Non-Revenue section of Duncan Shop is responsible for inspecting and servicing approximately 600 cars, trucks and a range of other mobile equipment used to support TTC operations. To ensure that inspections are completed as required, the section sends out reminders to User Departments advising which vehicles are due for inspection prior to the inspection date.

To test the compliance to the required inspection schedules, Audit examined a sample of 25 non-revenue vehicle and equipment maintenance records. Audit testing found thirteen of the twenty-five vehicles were overdue for a major inspection.

RECOMMENDATION: Management should review inspection schedules and continue to improve the current process for communicating follow-ups on overdue inspections.

**MANAGEMENT
RESPONSE:** The majority of missed inspections, majors or minors, are for non-revenue equipment, not non-revenue vehicles operated on the roads. All Ministry Transportation Ontario (MTO) inspections are completed as required. Bus Maintenance Department is currently reviewing the inspection maintenance program to determine whether the current frequency of inspections on non-revenue equipment is warranted. The initial review has indicated that equipment that sits idle for months has the same frequency as equipment that is used regularly. Mileage based or hour usage for determining inspection frequency is being considered. This review and any recommendations will be completed and implemented in 2012.

Responsibility: TSS / Duncan Shop

Status: Completed

FINDING #4

TOOL ASSET CONTROL

OBJECTIVE: To determine that effective controls are in place to safeguard and protect TTC assets from loss.

ANALYSIS: The main tool crib area is responsible for controlling the working tools and safety supplies for the Duncan Shop employees. The custodian of the tool crib is required to scan the employee tool card along with the bar code of the item taken from the tool crib; and, all tools are to be returned to the tool crib cage at the end of the work day.

Audit testing revealed that tools taken out after the custodian has left for the day are manually listed; however, the information is not always recorded into the tool inventory database.

RECOMMENDATION: Management should periodically verify the physical assets against the tool inventory database for accuracy and completeness.

**MANAGEMENT
RESPONSE:**   Duncan Shop tool assts are managed within a dbase designed by the Production Control Office. Tool Crib employees are tasked to complete daily rolling inventory checklist forms; the form identifies twenty-five random tools selected by the dbase to verify. It is estimated that all inventory assets are verified two and a half times per year. Duncan Shop uses a manual paper system to track tool usage on off peak hours; the afternoon shift Foreperson accompanies the employee into the Tool Crib to ensure the asset is tracked on the manual tracking form. Usage for Tool Crib tools on the afternoon shift is infrequent and does not warrant the hiring of an additional Tool Crib Operator.

Responsibility: Duncan Shop

Status: Completed

FINDING #5

ADMINISTRATION

OBJECTIVE: To determine that administrative practices are effective and efficient to meet the Department's operational requirements.

ANALYSIS: The following items were noted where administrative controls should be strengthened:

Employee Licences
Audit's analysis of the listing of employee training records (as at December, 2009) found that of the 205 employee records, 11 employees were shown with expired Trade licences and 6 had an expired Driver's licence.

Documentation of Fleet Management Procedures
New procedures and standards have been implemented in the Fleet Management area. However, the type and amount of documentation and criteria that should be maintained on file to support these initiatives has not been determined.

Records Management
Audit's review indicated that the records retention period is not established for documents relating to MTO vehicle licensing, license renewals, and decommissioning of buses.

RECOMMENDATIONS: Management should ensure:

- employees' Trade and Driver licences are maintained up-to-date

- updating of Fleet Management procedures are formally documented in the Departmental Standard Operating Procedures (SOPs)

- records retention is maintained in accordance with TTC requirements, i.e., TTC Records Retention By-Law

MANAGEMENT RESPONSE: Employee trade and drivers licences are maintained in the employee dbase and checked twice per year. The employees' driver's licenses finding did not take into account that due to

the MTO strike, employees on this list had temporary licenses issued or the employee job did not require them to have a driver's license. Documentation is complete showing updated trades licenses.

Fleet Management processes are well established and have not changed for numerous years. In early 2009, Fleet Management undertook an effort to integrate several existing email and spreadsheet processes into one central system for managing bus fleet allocation activities. The system was designed around an access database back-end with a web-based front-end for easy user interface. FMS, the acronym for Fleet Management System, was implemented in September 2009 and was rolled out with full documentation for all users at that time. FMS was demonstrated to the audit team during their visit to Bus Maintenance at the end of 2009. FMS works very well and has continued in use since September 2009 with two upgrades. A copy of the current documentation is available for review thru the Bus Maintenance website. No additional documentation is considered necessary. Updating of Fleet Management procedures are formally documented and the new procedure is working very well.

Records retention is maintained in accordance with TTC requirements. Records management is the responsibility of the Executive Branch and since the audit, they have established new policies for all Departments, and Bus Maintenance Department was actively involved in setting up and executing these new retention records.

Responsibility: Duncan Shop

Status: Completed