

**MEETING DATE June 18, 2003**

**SUBJECT Staff Response to Commission Inquiry – Management Program for Escalators and Elevators**

At its meeting of January 24, 2003, staff was requested to report on the escalator overhaul program, including maintenance time frames and previous reports on the issue of escalator repairs. The following is provided in response to the Commission's request.

**ESCALATORS**

There are 296 escalators in the subway system with the addition of 20 new Sheppard escalators. The overall escalator availability for 2002 excluding the Sheppard escalators is 96.6%, which compares favourably to transit industry standards and to the 96.0% reported in the last update of November 1999. Within TTC, the primary performance measure is escalator stoppages, measured in Mean Days Between Stoppages (MDBS). The MDBS for the first three months of 2003 is 16.0 compared to 2001 and 2002 of 10.7 and 14.3 respectively. The escalator performance, categorized by maintenance activity, is summarized in the following table:

<b>ACTIVITY</b>	<b>NUMBER OF ESCALATORS AFFECTED</b>	<b>UNAVAILABILITY RATE *</b>	<b>TOTAL ANNUAL STOPPAGES</b>
Preventive Maintenance	276	1.5%	3312
Overhaul Program	12	1.4%	12
Unplanned Calls	276	0.3%	5948**
Repairs	276	0.2%	919
	<b>TOTAL</b>	<b>3.4%</b>	

\*2002 Statistic excludes Sheppard Line Escalators due to early life reliability problems.

\*\*Includes all nuisance safety calls.

**Preventive Maintenance (1.5%)**

Preventive Maintenance activities are undertaken to meet legislated requirements under the CSA/B-44 Safety Code. Escalator units are operating almost continuously seven days a week, the passenger loads are heavy and a combination of high/low temperatures, salt, water and brake dust makes for a harsh environment. Preventive maintenance activities are required to ensure TTC escalators can function reliably under extreme conditions. Maintenance work for high customer impact units is carried out in a manner to minimize customer inconvenience by working on units operating in the opposite direction of passenger flow, or on nights and weekends.

### **Overhaul Program (1.4%)**

The Escalator Overhaul Program was initiated in 1997 to address the replacement of escalators that had reached the end of their 25-year operating life expectancy. The life extension program is significantly less costly and requires less downtime/customer inconvenience than replacement with new by eliminating the need for major structural work to the stations. The scope of work for a typical 60-step escalator takes approximately 18 weeks, as follows:

- Preparation Stage – 3 weeks, which includes site preparation, complete dismantling of all components, cleaning and painting.
- Installation of New Interior Components – 7 weeks, which includes installation and alignment of pillow blocks, track brackets, motors, sprockets, gears and shafts.
- Installation of Step Systems – 3 weeks, which includes installation and alignment of step tracks, landing frames/plates, steps, step chains and handrail drive system.
- Installation of Exterior Components – 4 weeks, which includes installation and alignment of skirt panels, trims, decking, newels and safety switches.
- Final testing, inspection and site clean up – 1 week.

Since the inception of the program, all 44 Otis type escalators and 20 Kone type escalators have been successfully overhauled. The time taken to overhaul a Kone unit has dropped from an initial 28 weeks to 18 weeks per escalator. Overhauled units are our most reliable units performing close to 30 MDBS compared to the system target of 16.9 MDBS.

### **Unplanned Call Stoppages (0.3%)**

The majority of escalator stoppages are due to stoppages that are mandated by the Safety Code for Escalators. These stoppages occur when a safety switch is activated, shutting the power off to an escalator. A typical escalator has 25 safety switches.

As a result of the following actions taken to reduce the number of unplanned stoppages, escalator performance has improved by over 50% from 10.7 MDBS in 2001 to 16.0 MDBS in 2003 (first 3 months):

1. TTC led an industry regulatory change to increase the force settings used in moveable comb plate switches. This allowed us to successfully modify the design of the moveable comb plate switches, thus eliminating 2,400 nuisance stoppages a year.
2. Original skirting panels for 7 escalators at Downsview Station were re-designed using stainless steel panels to provide more rigidity resulting in a reduction of 250 stoppages a year.
3. Preventive Maintenance schedules are designed to ensure that escalators are maintained to a high standard of safety and reliability. This includes regular adjustments of safety switches.

### **Repairs (0.2%)**

In addition to upgrading our units through the Overhaul Program, staff will be directing more effort in reducing downtime resulting from repairs as a means to further improve customer service and lower operating cost. This will include identifying the rate and usage of components attributed to a repair stoppage.

### **Sheppard**

On November 22, 2002, the Sheppard Line officially opened with 20 escalators and 20 elevators. We are working with the installation contractor to complete outstanding deficiency work to meet the reliability to our system performance target of 16.9 MDBS per unit per month. The average MDBS has increased from 5.0 MDBS in December to 7.5 in February 2003.

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### **ELEVATOR STATUS**

The Commission currently has 61 elevators located within the subway system.

By working diligently with the elevator maintenance contractor, we have been able to improve the elevator reliability from 37.2 MDBS in 2001 to 50.0 MDBS in 2002. To continue in this direction, we will be focusing on four key elements:

- Implement new performance measure for elevators – 2003 target of 60 MDBS.
- Develop a co-operative relationship with the contractor to focus on customer service.
- Dedicated contractor maintenance personnel to develop intimate knowledge of our elevators to facilitate effective work.
- Continue with due diligence in supervising and administering the maintenance contract to ensure that the performance goal of 60 MDBS is achieved in 2003.

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### **Customer Information**

To achieve a higher level of customer service, an INFO telephone line is in place to provide effective customer information on the availability status of elevators and escalators 24 hours a day, 7 days a week. A recent audit of the telephone information system by our Internal Audit Department has confirmed that the current system meets its intended design requirements.

The current system relies on timely information updates from the field to the collectors, who in turn notify Transit Control. Transit Control arranges for the dispatching of appropriate TTC contractor or personnel to the site. Once the unit is returned to service, the information is relayed back to Transit Control to update the information system.

At a recent Advisory Committee on Accessible Transportation (ACAT) meeting, concerns on the timeliness of the information were brought forward. Staff will investigate enhancing customer information timeliness with the use of appropriate signage in collector booths. In addition, we will investigate the feasibility of a real time system, which would automatically alert the collector of an elevator stoppage in the station.

Chief General Manager

6-75-268

Attachment: 1999 Commission Report - Management Program for Escalators and Elevators

Presentation – Management Program Escalators & Elevators