

MEETING DATE: August 31, 2005

SUBJECT: Russell Hill Subway Train Accident Of August 11, 1995 Due Diligence Checklist Update

RECOMMENDATION

It is recommended that the Commission:

- i) Receive for information the updated Due Diligence Checklist relating to the Russell Hill Subway Train Accident of August 11, 1995, which provides a status report on the progress toward closing the Coroner's Jury Recommendations and the TTC's Internal Team Recommendations.
- ii) Forward this report to the Chief Coroner of Ontario, the City of Toronto, and the Province of Ontario for information.

BACKGROUND

Fifteen previous Due Diligence Checklist updates were submitted to the Commission at its meetings of April 2, 1996, May 28, 1996, July 9, 1996, December 10, 1996, March 4, 1997, December 16, 1997, June 17, 1998, December 2, 1998, September 1, 1999, December 8, 1999, September 5, 2000, August 29, 2001, August 28, 2002, August 27, 2003 and September 22, 2004.

The following definitions have been provided to staff to clarify their meaning within the Due Diligence Checklists:

Closed means that every aspect of the recommendation has been addressed and completed. There is documentation supporting the closure. For example: a signed-off written procedure is complete and currently being followed, the equipment is purchased and in use, or a memo is on file detailing the reason the TTC has non-concurred. The person responsible has signed-off on the Due Diligence Sign-off Report.

Closed by TTC means that every possible step has been taken by the TTC, and the completion of the recommendation rests with an outside agency. This applies only to Coroner's Jury Recommendations. The person responsible has signed-off on the Due Diligence Sign-Off Report.

Open indicates that the implementation of the recommendation is underway.

SUMMARY OF JURY AND TTC INTERNAL TEAMS' RECOMMENDATIONS

Three recommendations have closed since the last update on September 22, 2004. The TTC has closed 229 of the 236 recommendations from both the Coroner's Jury Recommendations and the Internal Teams' Recommendations. Of the remaining seven recommendations, five relate to the completion of the new Transit Control Centre. Two of these recommendations are scheduled to close in December 2005, and the remaining three will be considered closed upon the signing of the final Transit Control Centre Safety Certification Certificate, also scheduled for December 2005. Two other recommendations relate to the implementation of speed control, and are scheduled for completion in 2007. The following table provides a summary of the current status of recommendations.

CATEGORY	September 22, 2004	August 31, 2005	TOTAL
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	OPEN	CLOSED	OPEN	CLOSED	
Training	0	50	0	50	50
Track	0	31	0	31	31
Transit Control	2	37	2	37	39
Vehicles	0	32	0	32	32
Signals Design	5	27	3	29	32
Signals Maintenance	0	34	0	34	34
Coroner's Jury	3	15	2	16	18
TOTAL	10	226	7	229	236

ONGOING STEPS

The next updated Due Diligence Checklist, which is scheduled to be presented at the Commission Meeting in August 2006, will also be forwarded to the Office of the Chief Coroner of Ontario, to ensure that the Chief Coroner is apprised of our progress with respect to the resolution of all of the recommendations stemming from the Russell Hill Subway Train Accident.

The status of the recommendations are also summarized and reported in the TTC's monthly Chief General Manager's report. The TTC will continue to present publicly to the Commission each year in August, until closure of all recommendations, and will outline the status of all recommendations and any outstanding issues or deficiencies.

August 8, 2005

13.8.8

Attachment: Due Diligence Checklist #16

Russell Hill Subway Train Accident of August 11, 1995

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Due Diligence Checklist #16

Update re: Recommendations Open as of September 22, 2003

Russell Hill Subway Train Accident of August 11, 1995

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Summary – Implementation of TTC & Coroner’s Jury Recommendations *i*

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Note: This updated checklist contains updates to recommendations that were open as of the last update in Due Diligence Checklist #15, dated September 22, 2004. Disposition of the recommendations closed on that date may be referenced in previous Due Diligence Checklists.

August 31, 2005

**Russell Hill Subway Train Accident
Due Diligence Checklist SUMMARY**

Recommendations Open as of September 22, 2004

#	Category	Scheduled R: Revised	Responsibility	Summary of Recommendation	Updated Change
1	Jury #7	December 2006 R: December 2007	D. Finn	7 (i) & (v) Speed Control	To be operational on Sheppard Line by 1st Quarter of 2006, and balance of subway by the end of 2007.

#	Category	Scheduled R: Revised	Responsibility	Summary of Recommendation	Updated Change
		December 2004 R: December 2005	D. Finn	7 (vi) IPHC	New Train Control system in service on B-D & YUS since May 2004. This recommendation will be considered closed upon the signing of the final Safety Certification Certificate, scheduled for December 2005.
2	Jury #8	Closed	D. Finn	2 trip arms	Completed December 2004.
3	Jury #11	December 2004 R: December 2005	D. Finn	New TCC	Train operation began in new TCC in May 2004. Will close upon the signing of Safety Certification Certificate.
4	T.C. #15	December 2004 R: December 2005	D. Finn	Plotting Incident Responses	Train operation began in new TCC in May 2004. Will close upon the signing of Safety Certification Certificate.
5	T.C. #39	December 2004 R: December 2005	D. Finn	New TCC	Train operation began in new TCC in May 2004. Will close upon the signing of Safety Certification Certificate.
6	Sig D. #6	April 2005 R: December 2005	D. Finn	Signal Violation Alarms at TCC	Operational as of March 2005 for interlocking signals. Deficiencies with automatic signals to be completed by December 2005.
7	Sig D. #16	December 2006 R: December 2007	D. Finn	Speed Control System	To be operational on Sheppard Line by 1st Quarter of 2006, and balance of subway by the end of 2007.
8	Sig D. #22	Closed	D. Finn	Raised trip arms in blind curves	Completed December 2004.
9	Sig D. #28	Closed	D. Finn	Raised trip arms in blind curves	Completed December 2004.
10	Sig D. #30	April 2005 R: December 2005	D. Finn	Signal Violation Alarms at TCC	Operational as of March 2005 for interlocking signals. Deficiencies with automatic signals to be completed by December 2005.

August 23, 2005

Aug 31 2005 Update

<i>Recommendation</i>	<i>Scheduled Completion Date</i>	<i>Actual Completion Date</i>	<i>Responsibility</i>	<i>Budget</i>	<i>Notes</i>
Coroner's Jury Recommendations 7(i, v, vi), 8 & 11(vii)					
(7) We strongly recommend the TTC conduct a comprehensive review and re-examination of the existing signal system with comparison to other Transit Authorities in North America. Attention should be focused on a human factors analysis with particular attention to signal interpretation. Action must be taken on the following items where deemed appropriate to improve safety.	Report: S: Oct. 31/96	Report Presentation (Internal): Nov.22/96 (Commission): Dec.10/96	M. Reidak		All of the recommendations below were addressed through the comprehensive Strategic Signal Plan which was presented to the Commission on December 10, 1996.

<i>Recommendation</i>	<i>Scheduled Completion Date</i>	<i>Actual Completion Date</i>	<i>Responsibility</i>	<i>Budget</i>	<i>Notes</i>
7 (i) the use of lunar white aspect in conjunction with red aspect. Red is to be seen as absolute.	Study:Oct 31/96 Work:Dec 31/98 R: Jan 1999	Subsection Closed May 31/99	M. Reidak	Study Budgeted in CP 2.4	Flashing Red Signals completed May 31, 1999.
	S: Dec 31/2001 R: Dec 31/2003 R: Dec 31/2005 R: Mar 31/2002 R: Dec 31/2006 R: Dec 31/2007		D. Finn		<p>Medium Term - A speed control system will eliminate all lunar white aspects. Scheduled for completion December 31, 2006. This will be done in accordance with the Strategic Signal Plan, which was presented on November 22, 1996.</p> <p>Update July 2002 – Contract awarded December 2001. Work has begun.</p> <p>Update July 2003 – Vehicle and wayside design ongoing. T –1 prototype approved.</p> <p>Update July 2004 – T-1 installation began in April 2004. Wayside design being finalized.</p> <p>Update August 2005 – To be operational on Sheppard Line by 1st Quarter of 2006, and balance of subway by the end of 2007.</p>

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7 (v) progressive speed control.	<p>Study - Oct. 31/96</p> <p>Installation - S: Dec. 1/2001 R: Dec. 1/2003 R: Dec. 1/2005 R: Dec 31/2006</p> <p>R: Dec 31/2007</p>		D. Finn	CP 2.4	<p>A speed control system will be installed. Completion of installation is scheduled for December 31, 2006.</p> <p>Update July 2002 – Contract awarded December 2001. Work has begun.</p> <p>Update July 2003 – Vehicle and wayside design ongoing. T –1 prototype approved.</p> <p>Update July 2004 – T-1 installation began in April 2004. Wayside design being finalized.</p> <p><u>Update August 2005</u> – To be operational on Sheppard Line by 1st Quarter of 2006, and balance of subway by the end of 2007.</p>

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7 (vi) Expansion of the existing TTC Intermediate Point Headway Control system to identify headway and train separation.	<p>Study - Oct. 31/96</p> <p>Installation - Dec.31/2001</p> <p>R: July 2000</p> <p>R: July 2002</p> <p>R: Oct 2002</p> <p>R: July 2003</p> <p>R: Oct 2003</p> <p>R: Dec 2004</p> <p>R: Dec 2005</p>		D. Finn	Included in CP 30A	<p>The IPHC system will not be expanded. The new Transit Control Centre's signal system scheduled for October will identify headway and train separation in accordance with Jury Recommendation #15 and the Strategic Signal Plan presented November 22, 1996.</p> <p>Update July 2003 – In-service testing is ongoing. The revised date is October 2003.</p> <p>Update August 2004 – New Train Control System in place May 2004. This recommendation will be considered closed upon the signing of the final Safety Certification Certificate, scheduled for December 2004.</p> <p><u>Update August 2005</u> – Signing of the final Safety Certification Certificate scheduled for December 2005.</p>

<i>Recommendation</i>	<i>Scheduled Completion Date</i>	<i>Actual Completion Date</i>	<i>Responsibility</i>	<i>Budget</i>	<i>Notes</i>
(8) We recommend the TTC eliminate the automatic key-by ability to allow trip arms to be raised behind trains occupying long track blocks.	<p>Test - June 30/96</p> <p>Study - Oct 31/96</p> <p>Work - Dec.31/98 R: Dec.31/00 R: Mar 1/2001 R: June 2002 R: June 2003 R: Nov 2003 R: Oct 2004</p>	<p>June 30/96</p> <p>Nov.22/96</p> <p>CLOSED Dec 2004</p>	D. Finn	CP 2.4	<p>Two trip arms will be raised behind trains in long signal blocks with blind curves. The work is scheduled for completion Dec. 31/98.</p> <p>The automatic key-by ability will not be removed.</p> <p>Locations identified as having similar characteristics as the accident site will be completed in 1998.</p> <p>A comprehensive system-wide program has been included in the 1999 Capital Budget submission.</p> <p>Update July 2003 – Final completion of this work has been delayed due to the heavy resource demands of the Sheppard Line. Design has resumed for the remaining locations and completion is scheduled for November 2003.</p> <p>Update August 2004 – Project delayed due to operational emergencies (B2 relays, SRT unsafe door openings).</p> <p><u>Update August 2005 – Completed.</u></p>

<i>Recommendation</i>	<i>Scheduled Completion Date</i>	<i>Actual Completion Date</i>	<i>Responsibility</i>	<i>Budget</i>	<i>Notes</i>
(11) We support the TTC initiative to build a new Transit Control Centre (TCC) scheduled for completion in the year 2000. In the interest of public safety, we recommend interim improvements be made to the existing TCC facility and its operation:	Fall 2000 R: Aug 2001 R: Dec 2001 R: Mar 2002 R: July 2002 R: Oct 2002 R: July 2003 R: Dec 2003 R: Dec 2004 R: Dec 2005		D. Finn	CP	Update June 2003 - The new Transit Control Centre began cutover in March 2003, and will be fully operational by December 2003. Update August 2004 – This recommendation will be considered closed upon the signing of the final Safety Certification Certificate. <u>Update August 2005</u> – Signing of the final Safety Certification Certificate scheduled for December 2005.

<i>Recommendation</i>	<i>Scheduled Completion Date</i>	<i>Actual Completion Date</i>	<i>Responsibility</i>	<i>Budget</i>	<i>Notes</i>
vii) use of signals expert on staff in TCC to interpret reported faults.	<p>Trouble Desk in new Transit Control Centre</p> <p>S: Fall 2000 R: Aug 2001 R: Dec 2001 R: Oct 2002 R: July 2003 R: Dec 2003</p> <p>R: Dec 2005</p>	Subsection Closed August 2004	D. Finn	Operating (labour) \$465,000 (1996\$'s)	<p>Partially agree - A control desk will be provided in close proximity to the new TCC, to handle all Signals/Electrical/Communications issues.</p> <p>Transit Control Daily Log review now in effect.</p> <p>Update July 2002 - There are no current plans to have a Signals/Electrical/Communications staff member in Transit Control. This will be reviewed in conjunction with the opening of the new Transit Control Centre.</p> <p>Update June 2003 – No change.</p> <p>Update August 2004 – Event playback capability is now operational and has been used successfully to interpret faults. Signals experts are available 24/7 to interpret these as required. It is not considered necessary that staff be physically located in the TCC to perform this function. Consideration is also being given to having a Signal Foreperson physically in the TCC during rush hour service.</p> <p><u>Update August 2005</u> – Signing of the final Safety Certification Certificate scheduled for December 2005.</p>
Transit Control Recommendations 15 & 39					

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(15) The Transit Control Centre shall develop a method of plotting the incident response activities so that everyone in Control can see a picture of the incident & response developing. SR	Dec.31/2000 R: Dec 2001 R: Mar 2002 R: July 2002 R: Oct 2002 R: July 2003 R: Dec 2003 R: Dec 2004 R: Dec 2005		D. Finn	CP	<p>New "state of the art" technology, mimic boards, etc. available upon completion of the new Transit Control Centre (December 2001) will address these issues. The rear projection screen technology planned for the new Transit Control Centre will provide the level of tracking detail to allow the Controllers to plot the trains at an incident scene. In the interim there are two solutions to the recommendation. The first involves the plotting of an incident on the back of a message slip and the second, which should be implemented this year is the introduction of a more accurate train tracking system which will replace the current CTDI system. New call taking software being pursued. Demonstration to be done by December 1998. MIS was requested to provide budget funds for call taking software in their 1999 budget.</p> <p>Update June 2003 – The new Transit Control Centre began cutover in March 2003, and will be fully operational by December 2003.</p> <p>Update August 2004 – Train Operation began in the new Transit Control Centre in May 2004. This recommendation will be considered closed upon the signing of the final Safety Certification Certificate, scheduled for December 2004.</p> <p>Update August 2005 – Signing of the final Safety Certification Certificate scheduled for December 2005.</p> <p>See Coroners' Jury Recommendation #11.</p>

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(6) Consider the installation of alarms at Transit Control which will annunciate whenever a signal is violated.	<p>S: Dec 31/00 R: Aug. 2001 R: Dec 2001 R: Mar 2002 R: July 2002 R: Oct 2002 R: July 2003 R: Dec 2003 R: Apr 2005</p> <p>R: Dec 2005</p>		D. Finn	Included in CP 30A	<p>The comprehensive review of the Signal System in the Strategic Signal Plan presented November 22, 1996 addressed this issue. The new Transit Control Signal System will include monitoring of red signal overruns at interlockings only.</p> <p>Update June 2003 - The new Transit Control Centre began cutover in March 2003, and will be fully operational by December 2003.</p> <p>Update August 2004 – Train Operation began in the new Transit Control Centre in May 2004. Red Signal overrun not fully implemented.</p> <p><u>Update August 2005</u> – Operational as of March 2005 for interlocking signals. Deficiencies with automatic signals to be completed by December 2005.</p>

<i>Recommendation</i>	<i>Scheduled Completion Date</i>	<i>Actual Completion Date</i>	<i>Responsibility</i>	<i>Budget</i>	<i>Notes</i>
(16) Analyze signal design in older section of subway where signals are located within stations and determine if modifications are feasible without affecting system design adversely. RT RT	S: Jun. 30/97 R: Dec. 31/01 R: Dec. 31/03 R: Dec. 31/05 R: Dec. 31/06 R: Dec. 31/07		D. Finn	CP 2.4	<p>This is not cost effective in the short term with the existing signal system. This will be addressed when a speed control system is installed. A decision has been made to proceed with a speed control system for completion December 2006.</p> <p>Update July 2003 – Design ongoing. Installation to begin in the 4th quarter of 2003.</p> <p>Update July 2004 – T-1 installation began in April 2004. Wayside design being finalized.</p> <p><u>Update August 2005</u> – To be operational on Sheppard Line by 1st Quarter of 2006, and balance of subway by the end of 2007.</p>

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(22) Raise trip arm immediately behind train. RT	S: Dec 31/98 R: Dec. 31/00 R: Mar 31/01 R: June 2002 R: June 2003 R: Nov 2003 R: Oct 2004	CLOSED Dec 2004	D. Finn	CP 2.4	<p>Test & evaluation program initiated in October 1, 1995, both ways between Dupont and Eglinton West. Operations does not concur for system wide, only for long blocks with blind curves.</p> <p>Strategic signal plan presented Nov. 22/96 recommended raising two trip arms behind trains in long signal blocks with blind curves.</p> <p>A comprehensive system-wide program has been included in the 1999 Capital Budget submission.</p> <p>Update July 2003 – Final completion of this work has been delayed due to the heavy resource demands of the Sheppard Line. Design has resumed for the remaining locations and completion is scheduled for November 2003.</p> <p>Update August 2004 – Project delayed due to operational emergencies (B2 relays, SRT unsafe door openings).</p> <p><u>Update August 2005</u> – Completed.</p> <p>See recommendations #28 from the Signals Design Due Diligence Checklist.</p>

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(28) Modify the signal system to implement the double Trip. RT	S: Dec 31/98 R: Dec 31/00 R: Mar 31/01 R: June 2002 R: June 2003 R: Nov 2003 R: Oct 2004	CLOSED Dec 2004	D. Finn	CP 2.4	<p>A comprehensive system-wide program has been included in the 1999 Capital Budget submission.</p> <p>Update July 2003 – Final completion of this work has been delayed due to the heavy resource demands of the Sheppard Line. Design has resumed for the remaining locations and completion is scheduled for November 2003.</p> <p>Update August 2004 – Project delayed due to operational emergencies (B2 relays, SRT unsafe door openings).</p> <p><u>Update August 2005</u> – Completed.</p> <p>Refer to Signals Design Recommendations #22.</p>

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<p>(30) Explore the feasibility of real time monitoring of trains violating red signals and the provision of resulting alarms at Transit Control.</p> <p style="text-align: right;">RT</p>	<p>S: Dec 31/00 R: Aug 2001 R: Dec 2001 R: Mar 2002 R: July 2002 R: Oct 2002 R: July 2003 R: Dec 2003 R: Apr 2005</p> <p>R: Dec 2005</p>		D. Finn	Included in CP 30A	<p>The new Transit Control signal system will record / monitor trains violating red interlocking signals in real time and annunciate the alarms in accordance with the Strategic Signal Plan presented November 22, 1996.</p> <p>Update June 2003 - The new Transit Control Centre will be fully operational by December 2003.</p> <p>Update August 2004 – Train Operation began in the new Transit Control Centre in May 2004. Red Signal overrun not fully implemented.</p> <p><u>Update August 2005</u> – Operational as of March 2005 for interlocking signals. Deficiencies with automatic signals to be completed by December 2005.</p> <p>For 72% of the active fleet, whenever a signal is violated or a trip valve is activated, the event is recorded on the vehicle event logger. The information is automatically recorded on SMS. In addition, there is an alarm activated at ECD (Equipment Control Desk).</p> <p>When Speed Control is implemented, H5 vehicles will be included, bringing the total to 91% of the active fleet. H4 vehicles will not be included.</p> <p>See Recommendations #6 of the Signals Design Due Diligence Checklist.</p>

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