

Overview Report

City of Ottawa - Rideau Transit Group Trial Running Requirements

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1. Scope of Overview Report

1. This overview report explains the Trial Running requirements as set out in the Project Agreement between the City of Ottawa (City) and Rideau Transit Group General Partnership (RTG) and sets out the Trial Running process as it took place in 2019.

2. Trial Running requirements in the Project Agreement

2. The “trial running” of the Ottawa Light Rail Transit (LRT) system is established as an obligation of RTG in the Project Agreement, described as being part of RTG’s overall required commissioning obligations prior to the system being ready for Revenue Service: “The scope of the testing and commissioning plan/strategy will include Trial Running of the System in segments and as a fully integrated System

DISCLAIMER

Please note that in accordance with the Commission’s Rules of Procedure, the statements in this Overview Report may be challenged or supplemented through evidence led before the Commission or submissions made to the Commissioner. The Commissioner will consider all the evidence entered in the Commission’s public hearings in determining the weight to be ascribed to anything contained in the Overview Report.

to the extent necessary to demonstrate the functional capability and safety of the System.”¹

3. Schedule 15-1 of the Project Agreement defines Trial Running as: “a twelve (12) consecutive day period that may commence upon the successful completion of testing and commissioning. Upon successful completion of trial running, the integrated system will be ready for revenue service.”²
4. Under the heading “Integrated Revenue Service Availability Testing” in Schedule 14 (Commissioning) of the Project Agreement, the scope of Trial Running is set out in full as follows under the following subheadings (RTG being referred to as “Project Co” therein):³
 - a. Trial Running Objectives;
 - b. Scope of Trial Running; and
 - c. Performance Criteria for Trial Running Acceptance.

Integrated Revenue Service Availability Testing

(i.) Trial Running Objectives

(A) Project Co shall conduct Trial Running when the integrated System has been tested and is essentially ready for Revenue Service Commencement. Trial Running will be the final step in confirming readiness for Revenue Service Commencement.

(B) The fundamental objective of Trial Running is to exercise the complete integrated System, including all subsystems, operating personnel and operating procedures, to confirm readiness for Revenue Service Commencement. This can be subdivided into the following key objectives:

(I) to familiarize the operating and maintenance staff with the operation of the integrated system and Standard Operating Procedures;

(II) to exercise and validate the operating schedules and operational performance requirements; and

(III) to exercise and confirm the operating reliability of the subsystems simulated under various operating conditions (normal and emergency). The basic design requirements and safety and security requirements will have been verified through the testing and commissioning program prior to this stage of Trial Running.

(ii.) Scope of Trial Running

- (A) Project Co shall conduct the trial running for final acceptance which will be conducted for a period of 12 consecutive days following successful completion of testing and commissioning; verification by Project Co that there are no deficiencies to prevent safe running of the System; and verification that there are an adequate number of trained staff to operate the System. At the end of this exercise, the integrated system will be ready for Revenue Service Commencement.
- (B) Trial Running shall be reviewed on a day by day basis by the Commissioning Team.
- (C) The objective of this stage is to operate a full regular scheduled service on the full line using the peak and non-peak schedules for an extended period. Passengers will not be carried. The tests will include a variety of failure management scenarios that could reasonably be expected to occur in regular Revenue Service. The City will have the opportunity to review and approve the failure management scenarios that will be tested during Trial Running.

(iii.) Performance Criteria for Trial Running Acceptance

- (A) Project Co shall use the trial running period to collect operating data and evaluate system reliability, availability, and maintainability performance and to demonstrate that the process

to collect, evaluate, and validate the operating data has been properly established. Using prescribed procedures, data on service deviations will be collected and assigned against the Vehicles and specific subsystems down to the LRU level. The database shall provide verification of system reliability to the LRU level. If the cumulative failure of any LRU exceeds 10% of the total LRU population, up to and including the completion of the Reliability Acceptance Test; Project Co shall redesign and replace the defective LRU's.

- (B) Validation of the Trial Running acceptance shall be performed by the Independent Certifier.
- (C) The Trial Running of the System will demonstrate to the satisfaction of the Independent Certifier that the specified travel times, headways and operational performance requirements can be achieved.

3. Development of the Trial Running Test Procedure

5. The procedure under which Trial Running would be performed was drafted by RTG, with drafts commencing in 2016. The City commented on several of these drafts. A timeline of the development of the Trial Running procedure is appended to this overview report as [Appendix A](#).
6. On or around May 11, 2017, the City and RTG agreed to RFI-O-266, the "Trial Running Evaluation Process and 'Scorecard' Approach".⁴ The final Trial Running Test Procedure was prepared by Matthew Slade and William Allman, and reviewed and signed off by Claude Jacob, Peter Lauch, Matthew Slade, and William Allman, and dated July 31, 2019.⁵ The procedure contained a detailed list of criteria to be achieved by the system during the Trial Running Period in the areas of Safety, Operations, Maintenance Performance, Vehicle Performance, Station Performance, and Customer Systems and Other Major Systems, and included a scorecard which the Trial Running Review Team (TRRT) would use to evaluate a day of Trial Running.

4. The Trial Running process

7. Trial Running of the Ottawa LRT was conducted from July 29, 2019 to August 22, 2019.⁶ The results of the each day of Trial Running were reviewed each day by the TRRT, which was composed of Troy Charter (OC Transpo), Larry Gaul (OC Transpo), Richard Holder (City), Claude Jacob (Rideau Transit Maintenance), Kyle Campbell (Independent Certifier), Peter Lauch (RTG), Matthew Slade (Ottawa Light Rail Transit Constructors), and William Allman (Ottawa Light Rail Transit Constructors).⁷ Based on the review of data and discussions of the TRRT during its daily review meeting, the Independent Certifier scored each day of Trial Running as a “Pass”, “Repeat”, or “Restart”, in accordance with the Trial Running Test Procedure.⁸
8. Trial Running commenced using the procedure finalized on July 31, 2019.⁹ Before Trial Running was complete, RTG wrote to the City, indicating that, subject to agreement of the TRRT, certain test criteria contained in the July 31, 2019 procedure would be modified to criteria agreed upon in May 2017 and contained in RFI-O-266.¹⁰ Specifically, the requirement set out in the July 31, 2019 procedure that the system achieve an average “Aggregate Vehicle Km Availability Ratio” (AVKR) of 98% or higher over 12 days during Trial Running¹¹ was reduced to require instead an average AVKR of 96% or higher over 9 of 12 days (evaluated over a 12-day moving window of “passing” days).¹² The TRRT agreed to apply this modified criteria for the remainder of Trial Running.¹³
9. On August 23, 2019, based on the scorecards for each day of Trial Running as reviewed, agreed to, and signed off by the members of the TRRT¹⁴ and in accordance with its obligations under the Project Agreement, the Independent Certifier validated Trial Running Acceptance.¹⁵
10. A chart of the AVKR results of Trial Running was compiled and included as part of the Independent Certifier’s validation, and is appended to this overview report as [Appendix B](#).

NOTES

¹ City of Ottawa and Rideau Transit Group General Partnership. *Schedule 14 to Amended and Restated Project Agreement: Ottawa Light Rail Transit Project – Commissioning*, para 1.3(a) [Project Agreement]. (COM0000168; parent document: COM0000158)

² City/RTG. *Schedule 15-1 to Project Agreement – Technical Definitions and Reference Documents*, p. 20. (COM0000250)

³ City/RTG. *Schedule 14 to Project Agreement – Commissioning*, para 1.5(e). (COM0000168)

⁴ Infrastructure Ontario. *Request for Information initiated by Owner, sent to Project Co (RFI-O-266)*, “Trial Running Evaluation Process and ‘Scorecard’ Approach”, May 11, 2017. (COW0442401)

⁵ OLRT Constructors. *Ottawa Light Rail Transit Project: Trial Running Test Procedure* [TR Test Procedure], Final REV02. (OTT03177178)

⁶ Altus Group Limited. *Validation of Trial Running Acceptance* [TR Acceptance Validation], August 23, 2019. (COW0270758)

⁷ Altus, *TR Acceptance Validation*, August 23, 2019. (COW0270758)

⁸ Altus, *TR Acceptance Validation*, August 23, 2019. (COW0270758)

⁹ OLRTC, *TR Test Procedure*, Final REV02. (OTT03177178)

¹⁰ Rideau Transit Group. *Trial Running Procedures*, Letter from Peter Lauch to Michael Morgan (RTG-OTT-00-0-LET-0866), August 16, 2019. (COW0158931)

¹¹ OLRTC, *TR Test Procedure*, Final REV02, p. 9. (OTT03177178)

¹² RTG, *Trial Running Procedures*. (COW0158931)

¹³ Altus, *TR Acceptance Validation*, August 23, 2019, p. 2 (see “TRRT Conclusion of Trial Running Statement”). (COW0270758)

¹⁴ Altus, *TR Acceptance Validation*, August 23, 2019, see Appendix B. (COW0270758)

¹⁵ Altus, *TR Acceptance Validation*, August 23, 2019. (COW0270758)

Appendix A: Trial Running Procedure Development Timeline

Date	Document ID	Description
February 9, 2016	RTG00435596.0002	Trial Running Test Plan Rev A – Initial draft for internal review
April 20, 2016	COW0250939	Trial Running Test Plan Rev 0
May 2016	COW0361612	City and OLRTC comments on Rev 0
May 11, 2017	COW0442401	RFI-O-266 – Trial Running Evaluation Process and “Scorecard” Approach
July 26, 2017	ALS0008871	Trial Running Test Plan Rev 1
Nov 1, 2018	RTC01160684.0001	Trial Running Test Plan Rev 2
Jan 4, 2019	DEL0017778	Trial Running Test Plan Rev 01
April 2019	COW0360463	Trial Running Test Plan and Trial Running Test Procedure City comments
July 29, 2019	RTC01185970.0001	Trial Running Test Procedure Final
July 30, 2019	RTC01186035.0002	Trial Running Test Procedure Final Rev 01
July 31, 2019	OTT03177178	Trial Running Test Procedure Final Rev 02

Appendix B: Compiled AVKR Results

AVKR						
Day #	Day	Date	%	Schedule KM	Actual KM	Status
1	Saturday	3rd AUG	97.30%	10,410.63	10,130	Actual
2	Sunday	4th AUG	99.50%	7,810.51	7,771	Actual
3	Monday	5th AUG	95.22%	12,178.46	11,596	Actual
4	Tuesday	6th AUG	91.34%	12,178.46	11,124	Actual
<i>Pause</i>	<i>Wednesday</i>	<i>7th AUG</i>		12,178.46	10,380	<i>Actual</i>
<i>Pause</i>	<i>Thursday</i>	<i>8th AUG</i>		12,178.46	10,351	<i>Actual</i>
Restart						
1	Friday	9th AUG	97.44%	12,846	12,517	Actual
2	Saturday	10th AUG	99.16%	10,411	10,323	Actual
3	Sunday	11th AUG	99.01%	7,811	7,733	Actual
4	Monday	12th AUG	98.47%	12,178	11,992	Actual
5	Tuesday	13th AUG	91.69%	12,178	11,166	Actual
<i>Repeat</i>	<i>Wednesday</i>	<i>14th AUG</i>				<i>Forecast</i>
<i>Repeat</i>	<i>Thursday</i>	<i>15th AUG</i>				<i>Forecast</i>
6	Friday	16th AUG	92.28%	12,393	11,437	Actual
7	Saturday	17th AUG	96.95%	10,410	10,093	Actual
8	Sunday	18th AUG	97.42%	7,812	7,610	Actual
9	Monday	19th AUG	97.21%	11,675	11,349	Actual
10	Tuesday	20th AUG	97.15%	11,675	11,342	Actual
11	Wednesday	21st AUG	99.18%	11,785	11,689	Actual
12	Thursday	22nd AUG	96.79%	11,785	11,407	Actual
				77,535.85	74,926.95	

12 day AVKR 96.90%