



# Confederation Line Stage 1

## OTC / IAT Assessment Review of RTG's Ability to Enter Trial Running on February 1, 2019

Conducted on December 10-12, 2018

Presented to City Manager  
City of Ottawa  
December 21, 2018

**Background:**

John Manconi requested O-Train Construction (OTC) and the Independent Assessment Team (IAT) to assess RTG's stated goal to start Trial Running on February 1, 2019.

Successfully meeting the PA requirements for Trial Running is the last activity leading to RSA. However, there are key predecessor activities that must be achieved before Trial Running commences.

OTC and IAT examined 8 of these key activities using RTG's schedule, weekly progress reports, other technical reports and documents from RTG member firms, OTC field observations, and our professional judgement to project when we believe RTG will start Trial Running and achieve RSA.

The assessment was generally done without RTG's direct participation, except for a lengthy workshop meeting between ALSTOM and the City's vehicle Subject Matter Experts.

## Approach of this review

We approached this assessment with some awareness gained from prior reviews on 1. how RTG uses their schedules and 2. current organizational and technical challenges that need to be addressed.

### Schedules

Awareness that RTG's prior work schedules have generally:

- not been used to centrally manage all aspects of the project;
- not been resource loaded;
- been based on best case assumptions that repeatedly fail to meet their timelines, and;
- are often used to support their commercial strategies and positions.

### Organizational and Technical Challenges

- Financial and people resources;
- Underestimation of technical challenges (ALSTOM/THALES integration, Tunnel Ventilation Systems, Traction Power/OCS, Track, etc.)
- Underestimation of process challenges (System Assurance, Safety Certification, etc.)

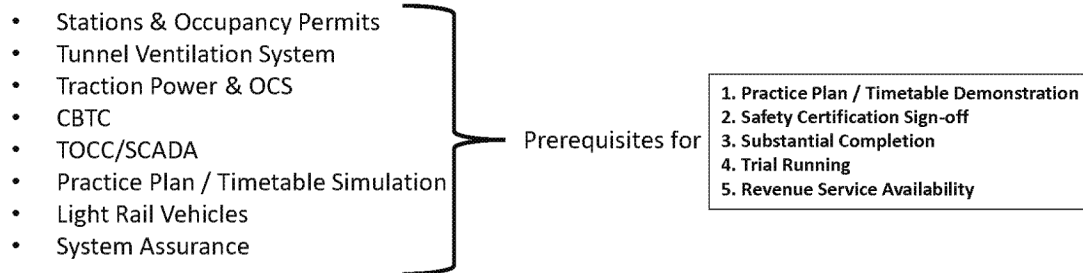
A pattern of continued schedule slippage is possible unless RTG finds a transformational way to change the way they address these challenges.

## Approach of this review

### Methodology

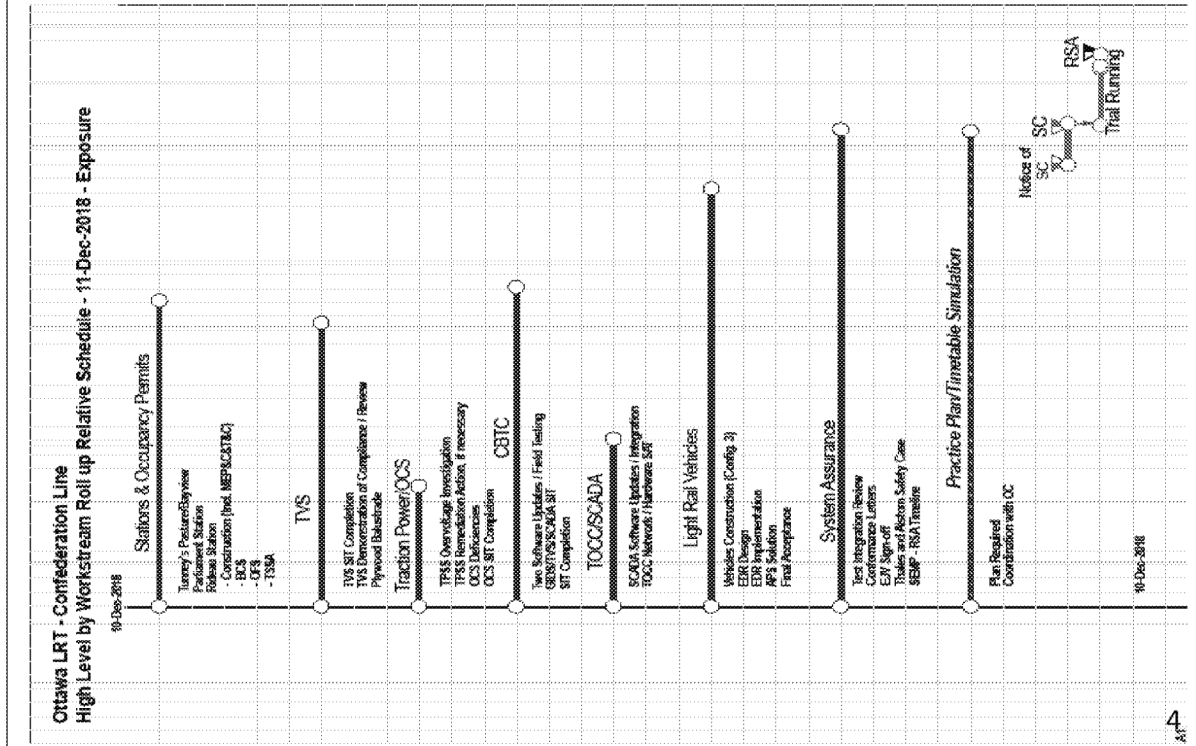
The following approach was taken in the absence of a revised RTG schedule or plan for achieving a February 1, 2019 start of Trial Running:

OTC/IAT reviewed 8 major project elements at risk due to significant unknowns and uncertainties by assessing current RTG progress against their schedule, OLRTC weekly reports and OTC field observations.



OTC/IAT then projected best and worse case completion dates for each workstream individually and collectively to meet Trial Running and RSA dates.

## 8 Major Project Elements at Risk



## Stations and Occupancy Permits



### AGS – Forecast Occupancy

Stations	Occupancy Date
Tunney's Pasture Station	12-Nov
Bayview Station	12-Nov
Pimisi Station	9-Nov
uOttawa Station	31-Oct
Lees Station	30-Oct
Hurdman Station	5-Nov
Tremblay Station	1-Nov
St. Laurent Station	16-Nov
Cyrville Station	2-Nov
Blair Station	23-Oct

Without Prejudice

## Stations and Occupancy Permits



### UGS Forecast Occupancy

Stations	Occupancy Date
Lyon Station	7-Nov
Parliament Station	7-Nov
Rideau Station	30-Nov



# Stations and Occupancy Permits

OTC Update 18-Dec

## BCS INSPECTIONS SCHEDULE

	Plumbing	Mechanical	Building
St. Laurent	17-Dec <i>Cancelled</i>	20-Dec <i>not yet scheduled</i>	Week Jan2
Rideau	17-Dec <i>Failed</i>	Week Jan 7th	Week Jan 14
Parliament	OLRTC to address sumps	Week Jan 7th	Week Jan 14
Lyon	OLRTC to address sumps	Week Jan 7th	20-Dec scheduled status tbd
Pimisi	12-Dec <i>Portion Passed</i>	14-Dec <i>Progress Inspection</i>	Week Jan2
Bayview	11-Dec <i>Passed</i>	13-Dec <i>Progress Inspection</i>	Week Jan2
Tunneys	17-Dec <i>Passed</i>	19-Dec <i>status tbd</i>	Week Jan2

### Legend:

<i>italics</i>	new information
<b>italics</b>	different information
	Inspection Passed
	Inspection Portion Passed
	Inspection Failed
	Progress Inspection
	Status to be confirmed

(8) MSF expansion to be completed as well

OLRTC provided 13-Dec

## BCS INSPECTIONS SCHEDULE

	Plumbing	Mechanical	Building
St. Laurent	17/12/2018	20/12/2018	Week Jan2
Rideau	Waiting BCS	Week Jan 7th	Week Jan 14
Parliament	Waiting BCS	Week Jan 7th	Week Jan 14
Lyon	Waiting BCS	Week Jan 7th	20-Dec
Pimisi	Passed	14-Dec	Week Jan2
Bayview	Passed	13-Dec	Week Jan2
Tunneys	Inspection done	19-Dec	Week Jan2



## Stations and Occupancy Permits

RTG is struggling to complete all Station work. Many previous schedules have been missed and there appears to be a diminishing number of personnel managing the work which could be part of the failure to achieve occupancy permits.

Risk elements:

- Tunney's Pasture and Bayview
- Parliament and Lyon
- Rideau (Construction MEP/Comms/T&C)
- BCS, OFS, TSAA

## Tunnel Ventilation System

RTG is dealing with a number of “anomalies” as a result of the system integration testing that has occurred for the downtown tunnel and underground stations. RTG is presenting a workplan on 21<sup>st</sup> Dec to explain how the TVS system will be commissioned.

Risk elements:

- TVS SIT acceptance
  - Cold flow measurement tests
- TVS Demonstration of compliance review
  - Verify conformance with 2010 NFPA 130
- Plywood Balustrade
  - TSAA approval?

## **Traction Power & Overhead Catenary**

The City and RTG are in disagreement about the state of readiness of the power supply and distribution system.

Risk elements:

- Traction Power overvoltage situation
- TPSS Remedial Action, if necessary
- OCS Deficiencies
- OCS SIT Compliance

## CBTC

The THALES CBTC system still requires software upgrades and there are several system wide tests outstanding.

### Risk Elements:

- Two software updates/field testing
- GIDS/TVS/SCADA SIT
- SIT completion

## TOCC / SCADA

The City still does not have full access to a fully functional TOCC with SCADA

Risk elements:

- SCADA software updates/integration
- TOCC Network/Hardware SAT
- Staff training time for Operations & RTM Maintenance personnel

## LRVs

The vehicle retrofit program is increasing in scope as new deficiencies are discovered. Re-testing of key elements and functions is still required. Concerns are growing that new issues keep developing...are there other unknown issues out there?

An integrated team of ALSTOM, THALES, RTG and City Subject Matter Experts conducted a detailed workshop during this assessment and reached two key conclusions.

1. January 31 remains as RTG's target date for fleet readiness
2. January 31 does not include EDR and Auxiliary Power Supply modifications

LRV fleet was grounded for almost 3 weeks due to the EDR problem. This contributed to decreased T&C activities over that time period and suspension of all driver training.

Risk elements:

- Emergency Door Release redesign / modification of 476 doors
- Auxiliary Power Supply failures
- AODA non-compliance above AW2 loading, Hydraulic Power Unit redesign
- Driver and passenger heat/windshield defroster

## System Assurance

RTG still has many documents to provide to demonstrate that the safety requirements of the project have been achieved. The City's Safety Auditor is of the opinion that the current progress is delayed in comparison to a typical, well integrated system delivery.

Risk elements:

- Test Integration Review
- Design Certificate and Construction Conformance Letter
- EJV Sign-off
- THALES and ALSTOM safety case
- SEMP – RSA Timeline



## Practice Plan

While not part of the PA all parties agree that RTG's practice plan approach will provide value. However, RTG has not fully defined how and when the full railway system will be tested with partial and full fleets. RTG has also missed their schedule for starting Practice Plan operations in November 2018.

The Practice Plan is an important activity that must occur prior to the start of Trial Running.

Risk elements:

- Plan Required
- Coordination with OC Transpo
- Baseline stability of all systems not established (LRVs, CBTC, Traction Power/OCS, switches)

## Summary Findings

OTC and IAT, based on RTG's current project status against their schedule, OTC field observations, known challenges that exist at this time, and RTG's past performance have projected the following Early and Late RSA dates:

**EARLY RSA FINISH could be May 2019, suggesting an April Trial Running period**, which reflects optimism that RTG continues to advance at no worse than a "past performance" pace with known challenges addressed and no new risks and uncertainties developing.

**LATE RSA FINISH could be September 2019, suggesting an August Trial Running period**, which reflects increased pessimism regarding RTG performance and an increased concern for slow resolution of known issues, and the possibility of new unknown risks and uncertainties occurring.

## Summary Findings (continued)

RTG's consistently over optimistic approach works against objective and productive decision-making and schedules for both parties.

Their false optimism continues to erode valuable time and leads to poor decisions such as their second annual Christmas to New Year shutdown because in their words..."all testing will be done by Christmas."



## **Next Steps**

- OTC has sought and is expecting shortly RTG's revised schedule and recovery plan, including a revised RSA date
- Continued monitoring of the 8 major at-risk Project Elements
- Review Outcome of the Tunnel Ventilation Workshop
- City should consider applying pressure through RTG's financial partners.