

THALES

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Via E-mail

DATE: 20 June 2017

Letter Reference: OLRT-THALES-0718

Ref. Subcontract No. 507528-P002 for the Supply of Automatic Train Control Systems Subcontracted Works for the Ottawa Light Rail Transit Project ("Subcontract")

Reference: OLR-THA-00479, Response to Notice of Extension Time Claim, 12 May 2017
 OLRT-THALES-703, Notice of Extension of Time Claim, 10 May 2017
 OLRT-THALES-0692 Schedule Mitigation Proposal Background & Justification, April 20, 2017
 OLRT-THALES-0719, CBTC Schedule Update – Monthly Progress-May 2017

Subject: Extension of Time Claim Justification

Frank,

OLRT understands and acknowledges the delay events that gave rise to the Extension of Time claim. OLRT is now seeking further validation of the magnitude of the extension of time damage to Thales. In response to OLRT's reference letter, Thales provides OLRT with a comprehensive breakdown of the testing schedule, test names, test duration and number of vehicles required for each test. The attached spreadsheet provides these details that were previously presented to OLRT in Ottawa in April 2017 as part of a Test & Commissioning review meeting that preceded the Extension of Time claim.

To determine the start of the CBTC integration and testing to substantiate Thales Extension of Time claim Thales must reaffirm the prerequisites necessary to commence CBTC integration testing.

1. OLRT provision of an Alstom vehicle(s) that has successfully passed Dynamic Post Installation Checkout (DPICO) and,
2. OLRT completion of CBTC wayside equipment installation and PICO tests (on zone by zone basis).

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Thales has been unable to commence vehicle integration testing as there has not been a 1st Article DPICO completed. Thales CBTC testing requires access to vehicle(s) that have successfully completed DPICO and have a finalized Braking and Propulsion response performance. The completion of OLRT infrastructure development and CBTC installation and

PICO is not progressing to schedule and therefore further elongating the CBTC integration schedule.

To determine the duration of the Integration and Test schedule that will substantiate Thales Extension of Time claim, OLRT has to consider the available test hours that can be granted to Thales. Our schedule presumes we have fifty (50) hours per week of guideway testing. These 50 hours per week test schedule does not include parallel tests related to vehicle DPICO and Automatic Speed Control (ASC) tuning. Additional guideway access shall be required for these activities. This parallel testing is approximately 1360 hours for vehicle DPICO and 500 hours for vehicle ASC. Thales schedule assumes vehicle DPICO and vehicle ASC tuning is not on the Critical Path but OLRT needs to schedule guideway access as part of their overall Test & Commissioning plan.

On the basis of fifty (50) test hours per week and applying Thales demonstrated integration testing experience, Thales estimates CBTC SAT testing, System Wide Integration testing and System Wide SAT will take at least 56 weeks as detailed in the attached spreadsheet (*OLRT SAT Plan Estimate*). These estimates are typical of Thales past performance on CBTC projects of similar complexity.

• SAT, DCS and Pre-flight testing	34 weeks
• System Wide Integration	<u>22 weeks</u>
Total	56 weeks

Based on the attached Critical Path schedule and the reference CBTC Monthly Progress Schedule, Thales estimates, based on DPICO vehicle available no later than 11 July 2017 that Handover to OLRT for Trial Running is no earlier than November 2018. Thales has assumed the first DPICO vehicle will be made available to Thales for the commencement of vehicle integration testing in the MSF (Zone 5). As Thales is unaware of any other qualification obligations on Alstom's DPICO vehicles, OLRT will have to advise when the first DPICO vehicle can be released to Thales for the start of vehicle integration testing.

Since the basis of the Extension of Time claim was developed there continues to be schedule erosion that will further extend the extension of time period. For example, the first DPICO was scheduled to commence 1 May 2017, but this has not started due to Alstom vehicle assembly and interface issues that Thales discovered as part of an extended Static PICO of the first Alstom vehicles. In addition, recent dynamic vehicle integration testing has revealed further issues that will need to be resolved as a pre-condition to commencement of the formal DPICO. System integration and vehicle testing was scheduled to commence in Zone 5 on 29 May, but this has not started as there is no DPICO vehicle. Refer to the attached Critical Path GANTT chart that has been revised since originally presented to OLRT in April 2017 to reflect the critical path Test & Commissioning timeline.

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Beyond the schedule erosion since the submission of the Extension of Time claim, Thales foresees additional schedule risks.

- The 1st DPICO vehicle is likely to slide further until all Alstom interface issues are identified and addressed by Alstom including retrofit on all production vehicles produced.
- There is a risk that Alstom qualification of Braking and Propulsion may postpone or invalidate vehicle integration testing that is not factored into Thales Test and Commissioning schedule and, in particular, Thales Automatic Speed Control (ASC) testing.
- There is a risk that Alstom is unable or fails to achieve a constant Braking and Propulsion reaction time regardless of train configuration.
- There is a risk that the first DPICO vehicle available to Thales for vehicle integration at the MSF is not the 1st DPICO vehicle therefore the commencement of critical path testing will be further delayed.
- There is a risk that the full fleet of vehicles may not be CBTC integrated and available for Revenue Service when Thales completes CBTC integration testing and hands over to OLRT for Trial Running.
- OLRT continues to struggle to complete on schedule the infrastructure development and CBTC installation and test. Unless there is meaningful improvement, Thales foresees the completion of critical Zone 1 and 2 to be later than OLRT's October 2017 planning date.
- The late release of other interface requirements such as SCADA and onboard PIS/PAS for Thales software build #3 will place further integration & test rework that is not factored into the current SAT testing schedule.
- The late release of Zone 1 and 2 As-Built guideway and As-Installed Transponder Tag chainage will result in additional and late SW database releases that are not factored into the current SAT testing schedule.
- There is a risk of prolonged Test and Commissioning of all subsystems as OLRT has not completed an integrated Test and Commissioning schedule for all subsystems that require access to the guideway for their subsystem testing. Until this is complete, OLRT cannot determine the total timeline for all Test & Commissioning activities for all systems.
- An indeterminate level of involvement by the City's Independent Certifier could extend validation of OLRT's Trial Running or protract Thales SAT schedule.
- There is a risk the City will expand the Operational Scenarios beyond those proposed by Thales. Changes will impact Thales ATS SW schedule and therefore Thales SAT testing timeline.
- There is a risk of future RFQs such as onboard PIS/PAS and TPMS variations will impact the CBTC test schedule.

As Thales integration and test schedule has no remaining float, any of the above risks or other unforeseen events will have a detrimental impact on Thales completion of CBTC commissioning.

In light of the above clarifications, Thales shall be deemed to have provided all information and details as requested by OLRT and complied with the requirements and procedure set in the Subcontract. Therefore, OLRT shall agree with Thales' position with respect to the Extension of Time entitlement, and extend the Subcontract time and grant all other related entitlements due to Thales accordingly.

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Should you have any queries relating to this matter, please do not hesitate to contact me.

Sincerely,



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Attach. OLRT SAT Plan Estimate
OLRT Critical Path_June 2017

cc: M. Al Kayyali
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