

ALSTOM Transport Canada Inc.

ALSTOM

1050, Beaver Hall, 18<sup>th</sup> Floor  
Montreal (Québec) Canada  
H2Z 0A5  
Tel. : 514 764-1725  
Fax : 514 879-1955

[www.alstom.com](http://www.alstom.com)

November 1, 2018

Mr. Claude Jacobs  
General Manager  
Rideau Transit Maintenance General Partnership  
666 Kirkwood Avenue, Suite 304  
Ottawa, ON K1Z 5X9

Letter No.: **ALSMNT-RTM-0092**  
In reply to: RTM-ALS-0024, RTM-ALS-0025 (Closed)  
Action: RTM  
Letter Ref.: RTM-ALS-0024, 0025.

Subject: Revenue Service Readiness, Outstanding requirements from RTM/OLRTC

Subcontract: Ottawa Light Rail Transit Project, Maintenance Subcontract dated February 12, 2013, between Rideau Transit Maintenance General Partnership ("RTMGP") and ALSTOM Power & Transport Canada Inc.

Dear Claude:

This letter is with regards to your letters RTM-ALS 0024 on 20<sup>th</sup> September and RTM-ALS0025 on 28<sup>th</sup> September, regarding readiness for Revenue Service by November 10<sup>th</sup> and the expectation that on 30<sup>th</sup> November RSAD date will be achieved.

Alstom will hire and train sufficient personnel and will ensure they have maintenance plans and instructions in place to be ready to maintain the system when it is handed over by OLRTC to the City.

However, Alstom wants to bring to RTM's attention that there are several items that need to be provided by RTM/OLRTC for a successful handover to occur.

In addition, although it may be possible to begin Revenue Service Readiness, there are several risks, created by incomplete documentation, training, spares etc. from OLRTC, that need to be mitigated to successfully execute the maintenance of the system and assure contractual levels of performance.

This letter is to provide more detail as to what is needed and some of the risk items. It is not meant to be exhaustive, but rather a snapshot of the key issues. Most have been already described in various emails and meetings held between Alstom and RTM.

ALSTOM Transport Canada Inc.

ALSTOM

1050, Beaver Hall, 18<sup>th</sup> Floor  
Montreal (Québec) Canada  
H2Z 0A5  
Tel. : 514 764-1725  
Fax : 514 879-1955

[www.alstom.com](http://www.alstom.com)

## Facilities

There are currently insufficient maintenance tracks available to perform maintenance on the LRVs. In the Stage 2 Commitment letter signed, in addition to LMB1(light maintenance track 13), OLRTC/RTM should provide the three maintenance tracks in the permanent Belfast Extension works ("MSF2") by December 2018, with the track with the pit available by 1 December 2018 and until that date provide facilities on the three southern tracks of the storage shed. Having access to the track with the pit by December 1 is important due to climatic conditions.

To date, there has been no progress on the definition or installation of equipment and facilities on the three southern tracks in the shed.

Given that the Revenue Service Readiness date has slipped to November 30<sup>th</sup>, and as winter is approaching, and if the MSF2 may be ready on 14<sup>th</sup> December 2018, Alstom may opt to a greater use of the LMB1 shared track and sanding and washing bay during December, to reduce the risk.

However, not having the MSF2 with the agreed equipment means that Alstom will work in degraded mode and are at risk of putting all trains into service at peak time. In addition, it is uncertain just what condition the MSF 2 or tracks in the shed will be in when OLRTC hands them over. Alstom considers it will need at least 2 weeks to ensure everything is in place and as expected.

Also important is having access to wheel lathe. The MOU requires the single axle wheel lathe to be available from January 2018 until the MSF 2 is handed over with a fully commissioned double axle wheel lathe. To date, while the single axle wheel lathe is available, it is not fully commissioned (although the training has been provided). Alstom will need to have the double axle wheel lathe commissioned and be trained on its use as soon as possible before the space where the single axle wheel lathe is can be used for other things.

The MOU also requires that sufficient Lockers / washrooms / parking lot is made available to Alstom to allow RTM and Alstom to meet the obligations to maintain the system and hand over the Revenue Vehicles to the Operator. To date, this has not occurred. In order to be ready for Revenue Service Readiness, Alstom has on-boarded technicians, who do not have appropriate facilities. In addition, please bear in mind that many of the technicians are unionised employees and so there may be a political component to consider.

RTM and OLRTC also need to make sure, when it has finished construction, that walkways, path ways and accesses between the shed and MSF 2 are acceptable, and they do not represent any risk to Alstom's employees.

This is particularly important because there is no UTO in the yard and so hostlers, MVT (Maintenance vehicle technicians), servicing / cleaning operators and spotters will be utilizing them more frequently, to ensure that LRVs are put into service in a timely manner. The risk to achieving contractual performance is increased in this degraded mode, especially if walkways do not take employee well-being and safety into consideration.

**ALSTOM Transport Canada Inc.**

**ALSTOM**

1050, Beaver Hall, 18<sup>th</sup> Floor  
Montreal (Québec) Canada  
H2Z 0A5  
Tel. : 514 764-1725  
Fax : 514 879-1955

[www.alstom.com](http://www.alstom.com)

### **Documentation**

As previously mentioned, Alstom is still struggling to recover the documentation that is necessary for the preparation of the program on preventive and corrective maintenance. Alstom does not have a master list of documentation being provided, that may support our investigation. We are still chasing some final design validated documents, maintenance manuals, RAMS information, maintenance records, as built documents etc., that are needed in order to complete our maintenance plans and ascertain the level of spares required. This master list will improve the efficiency of the search and a frequent update will inform RTM/Alstom of the incoming documentation.

Moreover, because of the length of time it takes to download documents, using 4P as a documentation control system extends the time taken to recover the documents by weeks or months. Another methodology to transfer the final documentation (HDD, USB KEY, dedicated server) should be considered. The delay in receiving documents and the significant time it will take to recover them through 4P, will lead to additional costs that Alstom may seek to recover from RTM/OLRTC.

Also, Alstom also does not have access to the whole Test and Commissioning information to show the test results of any of the parts of the system that have been completed. For example, grounding measurements of OCS or TPSS, geometry reports, de-stressing reports, ballast lab, acoustic and vibration measurement analysis, etc.... Not having these reports means that Alstom does not have a benchmark of acceptable conditions to maintain to, or what adaptations to its maintenance plan are needed to ensure the assets remain in good condition.

Please refer to the Annex A, to have a general view of the documentation status. Items highlighted in red indicate the documents that are mandatory to be received, to be able to start at the end of November 2018.

### **Asset Register /Asset Management Plan**

We have developed an Asset Register and Asset Management Plan according to the information we have received.

Because of the lack of documentation provided formally and the absence of document control, there has been an additional effort required to find what information exists in 4P and there is an additional cost to update records in this inefficient fashion as new information is discovered.

When we receive the updated information (as built drawings, physical verification of location etc...) we will update the Asset Register and the Asset Management Plan. The structure of the MMS and the configuration of the assets will be revised accordingly. The delay in receiving documentation and the consequent updating and correcting of the asset register and asset management plan will lead to continued additional costs being incurred by Alstom, due to the incomplete and inaccurate information provided by ORLTC to date.

When information from OLRTC has not existed; for example, tunnel drainage pumps, CTS etc., we have built preventative maintenance plans in accordance with our experience. This means that there is a risk that those items may be over maintained or under maintained until the information from OLRTC is received. Alstom should not be held responsible for any impact that this situation may create..



1050, Beaver Hall, 18<sup>th</sup> Floor  
Montreal (Québec) Canada  
H2Z 0A5  
Tel. : 514 764-1725  
Fax : 514 879-1955

[www.alstom.com](http://www.alstom.com)

### **Spares**

Alstom has received a list of spares that OLRTC will provide and the delivery of these spares has started. However, we do not have a clear definition of the final design, the BOM and the RAMS in certain subsystems, to know whether both the types of line items and the quantity of parts in each line item is sufficient to fulfill the contractual requirement of 2 years worth of spares. This may put at risk the availability of the system or increase the risk of service or quality failures, if either insufficient spares are made available or spares break at a faster rate than OLRTC considered in its allocation of warranty spares.

Please refer to Annex A for more detail of those systems that are most at risk.

### **Asset status**

There have been some emails on the wheel-rail interface and the pantograph – catenary interface. Alstom would like to raise to RTM's attention that there could be a risk to the handover of the system if the interface provides a safety concern and could also have an impact on assuring service and the costs of maintaining the system if the safety is assured given certain maintenance actions. We would strongly recommend that there is a formal answer about the interfaces and that we know what the final positions about the interfaces are before handover.

Many questions have been raised during our visual inspections of assets and have been reported to RTM. For example; the quality of the ballast, corrugation of the track leaving the yard, fixed catenary rail in the tunnel, water presence in the connector, tunnel etc. While many of these issues may be resolved by OLRTC before the system is handed over, Alstom does not have visibility of the actual conditions, or the criteria that is agreed for the handover. This puts at risk our ability to maintain the system to assure availability of service.

As agreed with RTM previously, a third-Party audit, by Systra is very important and useful to give an objective benchmark of the condition of the track and OCS and what rectification still needs to be done. Since Alstom has been denied permits by OLRTC to do this audit until after the system has been handed over, the audit has been scheduled for December 3<sup>rd</sup>, 2018. Until the audit is complete and a full review of the line on all subsystems and the real condition is known, the risk to meeting maintenance obligations and service performance and additional costs to mitigate these risks cannot be known.

### **Rail Road Vehicles**

It is necessary for the Rail Road Vehicles to go through all the line to test the envelope of the three rail road vehicles with the line and be sure that the vehicles comply or identify the area of discrepancies that exist, in order to avoid any problems at the start of the operations.

1050, Beaver Hall, 18<sup>th</sup> Floor  
Montreal (Québec) Canada  
H2Z 0A5  
Tel. : 514 764-1725  
Fax : 514 879-1955

[www.alstom.com](http://www.alstom.com)

## **Training**

To date, much of the training is yet to take place. Alstom is working with RTM and OLRTC to report and organise all the remaining trainings, but this will run until at least the end of November 2018. This creates additional problems, and at the same time Alstom is being asked to witness some tests, and also the training is taking place without having access to completed subsystems in order to utilize what they are trained.

In many cases, the training that has occurred is insufficient, as the training is more of a general presentation and does not cover important topics such as indication of the specific maintenance tasks to be performed and demonstration of how to do those tasks.

The current training status of each subsystem is shown in Annex B. As can be seen, today there is a lot of training that needs to be provided to be ready for Revenue Service Readiness.

We want to highlight the fact that due to the lack of information provided, the lack of practice on special equipment because limited access to the assets was given, or because the access we received was to work on incomplete systems; it is problematic for our technicians to have a good comprehension of the system or of the corrective / preventive tasks to perform. The first OCS training, in particular, was insufficient for Alstom to be able to perform maintenance.

In addition; by not having information from OLRTC and its suppliers of what to do when corrective repair is needed, increases the time of repair and recovery of the system after the start of revenue service. For clarity, except for the LRVs, ALSTOM should not be liable for any impacts to service that occur, in the event that corrective repair is required on assets that Alstom has not been trained on.

Alstom considers that additional training may be required once the system has been constructed.

## **Non UTO Hostlers**

While the yard is not operating in UTO mode, the hostlers / spotters will need to have sufficient portable radios available and full radio coverage of the shed. The initial proposal of ALSTOM for Hostlers didn't consider that any other assets / systems would be unavailable as UTO. Any additional gaps must be considered (additional staff for switches that are not ready, additional radios for LRV movement in the yard) for the start of the Revenue service.

## **LRVs**

Our understanding is that 32 LRVs will be available at 30<sup>th</sup> November. Based on the last Operating schedule we have seen (maximum 15 x 2 LRV consist at peak time from Monday through Friday and 11 x 1 LRV for weekends and holidays), this will enable 30 LRVs to be in Service at Peak time, with 2 LRVs as Operational Spares. However, it will mean that no preventative or corrective maintenance can be performed between 4am and 9:30 am on Monday to Friday.

1050, Beaver Hall, 18<sup>th</sup> Floor  
Montreal (Québec) Canada  
H2Z 0A5  
Tel. : 514 764-1725  
Fax : 514 879-1955

[www.alstom.com](http://www.alstom.com)

Once the LRVs achieve 25,000 km, the maintenance exam will require LRVs to be out of service for a 24-hour period. Based on the last Operating schedule seen, if trains start operating based on the Operating Schedule from 1 December, 25,000km and 30,000km inspections will begin first part of February 2019. Unless LRVs 33&34 are delivered by end of January 2019, there will not be Operational Spares available, which increases the risk of non-availability of service.

The LRVs currently have not achieved a high level of mileage. This means that there will be a period of time required to shake out reliability issues discovered once the LRVs are run. Consequently, there is a risk that LRVs will need more attention than usual, and if it takes more than 18 hours to resolve issues on the LRV, service availability may be affected.

As indicated earlier, once Revenue Service Readiness has been achieved, two flat tracks and 1 light maintenance bay (LMB) is required to perform the necessary maintenance from 10am – 3:30 am each day. Daily inspection and servicing / cleaning activities will take place from 7pm to 4am in the shed and the sand and washing bay.

### **Trial Run**

An ongoing program needs to be detailed and communicated as soon as possible, for us to finalize our shift pattern for hostlers. OLRTC needs to clarify their request and we will accommodate as much as possible.

We want to remind OLRTC/RTM that once the trial run period starts, the 2 drivers that have been provided to support OLRT's Test and commissioning, will then be required to act as hostlers for the trial run.

In addition, our support of the trial run period will be limited if training and witnessing of tests occurs at the same time and if there is a lack of spares or documentation from OLRT.

### **Safety Case**

For Alstom to begin maintenance, we need RTM/OLRTC to formally confirm that the system is safe to Operate. Normally, this requires the City to accept a safety case by the Constructor. The process of validation of the safety case is mandatory for our management to authorize that the system is safe for the Maintenance to start. We received from RTM, on October 31<sup>st</sup>, 2018, the process of how the Safety Case will be achieved but as of yet do not have formally validation that Safety Case has been achieved.

### **Handover process**

A handover process that clearly defines the condition of the assets being accepted and handed over, along with an agreed punch list of remaining actions and responsibility is necessary and is currently not available. Not having a defined and formalised the handover process increases the risk of gaps of understanding between Alstom, RTM and OLRTC which may lead to a risk of system availability and additional costs incurred to maintain.

**ALSTOM Transport Canada Inc.**

**ALSTOM**

1050, Beaver Hall, 18<sup>th</sup> Floor  
Montreal (Québec) Canada  
H2Z 0A5  
Tel. : 514 764-1725  
Fax : 514 879-1955

[www.alstom.com](http://www.alstom.com)

### **Cleanliness of the site**

We want to remind RTM/OLRTC that the Tunnel, Site and LRVS must be clean for handover and start of revenue service. Any repairs and graffiti removal that is required prior to handover is not a responsibility of Alstom Maintenance.

### **System Performance**

It is possible that the system, when it is handed over to RTM/Alstom, will not be consistent with the specifications of the contract and will not perform at the levels envisaged in the contract. If that is the case (for example, if at RSAD the system has only achieved an availability level of 96%, a noise and vibration test has not been performed, only 32 vehicles have been delivered) then achievement of certain KPMs may not be possible. Alstom cannot be held responsible to achieve a level of performance that has not been demonstrated at handover.

Neither should Alstom be held responsible for availability deductions, or service/quality failures due to missing / inaccurate documentation, spares or training.

Given that on 30<sup>th</sup> November, if Revenue Service Readiness is achieved, it is likely to be achieved in a degraded mode; we highly recommend that a corrective actions list is created to track all pending actions to be done by OLRTC. Once these corrective actions have been performed, OLRT has to demonstrate that the contractual levels of performance actually are achieved, before responsibility for performance to contractual levels is passed to RTM/Alstom. Until this point, while we are in this degraded mode, we believe Alstom should not be held liable for any KPM and availability deductions.

Please feel free to contact the undersigned with any questions.

Sincerely,



Justin Bulpitt  
Director, Bids & Technical Services

Attachment(s): 1) Annex A: Status of documentation and Spares by System.pdf  
2) Annex B: Status of supplier training given.pdf

cc: Alex Turner, RTM  
Tom Pate, RTM  
Alban Houssin, Alstom  
Jaime Careno, Alstom

**ALSTOM Transport Canada Inc.**

**ALSTOM**

1050, Beaver Hall, 18<sup>th</sup> Floor  
Montreal (Québec) Canada  
H2Z 0A5  
Tel. : 514 764-1725  
Fax : 514 879-1955

**[www.alstom.com](http://www.alstom.com)**