

## Message

**From:** Prendergast, Thomas F. [Thomas.Prendergast@stvinc.com]  
**on behalf of** Prendergast, Thomas F. <Thomas.Prendergast@stvinc.com> [Thomas.Prendergast@stvinc.com]  
**Sent:** 9/3/2018 2:16:41 PM  
**To:** Manconi, John [John.Manconi@ottawa.ca]  
**CC:** Begin, Jocelyne [Jocelyne.Begin@ottawa.ca]  
**Subject:** Re: Trains and Rideau

John -

Here are my comments regarding Pat's review and summarized points regarding the effects of a lower than required fleet size for RSA and thereby available fleet for service delivery.

To begin with, I agree with you wholeheartedly that you CANNOT treat this fleet as if it is a tested and reliable one. I am confident that at some point in time in the future the car being provided by Alston will be a reliable one, BUT you cannot count on that anytime soon. And as you know, reliability is the root measure of the car/fleet performance based on the rate/frequency of component, assembly, sub-system and system failures that affect service delivery. Availability is the measure of the number cars being ready and capable to provide service and that measure is a combination of both the fleet reliability and its maintainability, which is the measure of how fast failed equipment can be repaired and returned to service. That is an extremely important point to make because not only do you NOT have any true empirically driven history of the reliability of these cars, you do NOT have any experience of its maintainability. With a new staff who have never seen/experienced in-service failures and has no history of troubleshooting and effectuation get repairs it is likely that the time to repair will be much longer when service begins and will decrease over time as they gain experience. Add to that the fact that spare parts availability is unknown at this time and if/when critical parts are not available the vehicle won't be able to be returned to service unless they "cannibalize" parts from Stage 2 cars in production, something you should prohibit for a number of reasons. THIS IS A CRITICAL POINT AND ONE THAT YOIU SHOULD NOT MOVE ON (and I will be ore than glad to offer support as will Scott Kriegel who can provide numerous examples, as can you with fleets we have managed).

Pat's summary table of the impact of reduced trains being available for service is consistent with what Tim/Mario/Larry have come up with (I will forward that to you shortly). The numbers speak for themselves and illustrate load factor impacts on customers as well as headway increases which will result. The load factor issue will be exacerbated due to the winter weather and everyone wearing heavier and thicker outer wear. And the increased headways will result in similar effects on crowding and especially station boarding and alighting dwell times. Those increased headway effects are generally not "linear" in nature, but show up in more of a "step function" manner meaning that for slight increases in headway there is minimal or no impact then all of a sudden the impact is substantial.

With respect to ridership demand and what you can expect, you COULD assume a lower ridership number at opening, but that would be tantamount to overpromising and underdelivering. In my opinion, there is far too much at stake with a new service replacing an established one with very high ridership. If the assumption of lower ridership proves wrong you will have significant pressure to keep the BRT (or some part of it) running until things smooth out. There are no clear measures to define when that occurs and there will always be the subjective people who will demand that you do both.

Pat's summary of the value and use of a spare train is consistent with sound operations planning and service delivery philosophies. The use of a hot spare has its most significant value when you have to remove a train from service early in the rush hour period due to a major system/safety equipment failure and its insertion restores the full complement of vehicles for service. And given that the gap train is stored at the MSF there will always be some time lag prior to it actually going into service and picking up people.

I wasn't aware that there is a different service requirement for the AM and PM rush periods, but that is good because it gives you some additional redundancy for the afternoon rush.

Pat's comments regarding Rideau are "spot on" and provide sufficient justification for not achieving RSA if the full station and all of its access/egress points are not available. What is not clear is whether or not the station will pass all NFPA requirements related to evacuation scenarios that require all passengers to be evacuated to a

location identified as a “safe haven” in a certain amount of time. I have reason to believe that without all access/egret points available it will NOT pass.

Tom Prendergast

Sent from my iPad

On Sep 3, 2018, at 12:59 PM, Manconi, John <[John.Manconi@ottawa.ca](mailto:John.Manconi@ottawa.ca)> wrote:

**\*\*This e-mail is from outside STV\*\***

Tom can you review. Pat has done a good first cut on this. I agree with many points I don't agree with the banking on lower ridership. Please review and we can discuss prior to meeting with Rtg. The options he lays out is on assumptions of a tester and reliable fleet which this as we both know is not the case. Full 34 fleet continues to be my position. As the accountable executive people seem to want me to take risk to the public which I will not do. Thanks

Sent with BlackBerry Work  
([www.blackberry.com](http://www.blackberry.com))

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**From:** Scrimgeour, Pat <[Pat.Scrimgeour@ottawa.ca](mailto:Pat.Scrimgeour@ottawa.ca)>  
**Date:** Monday, Sep 03, 2018, 12:34 PM  
**To:** Manconi, John <[John.Manconi@ottawa.ca](mailto:John.Manconi@ottawa.ca)>  
**Cc:** Begin, Jocelyne <[Jocelyne.Begin@ottawa.ca](mailto:Jocelyne.Begin@ottawa.ca)>  
**Subject:** Trains and Rideau

John,

Here are some notes following from our phone discussion on Thursday afternoon.

1. Impact of fewer trains being available. Please see the attached table. This shows how fewer trains available for service affects the frequency of service, the number of people on each train, and the degree of overcrowding. Each is calculated with different numbers of trains available (down the left) and different levels of ridership demand (across the top).

1a. On ridership demand: All aspects of the system have been designed and specified to meet day-one ridership of approximately 10,700 people per hour per direction, and for growth from that point forward. In the years since procurement of the system, ridership has declined somewhat. Current measured bus ridership through downtown is between 8500 and 9000 people per hour per direction. Given that it may take some time for ridership to increase to previously-predicted levels (period of parallel service, time for customers to return to transit after detours end, time for customers to be attracted to transit by improved quality of service, time for employment levels downtown to increase with increased transportation system capacity), it may be acceptable to have fewer trains in service, and a reduced line capacity, for a short period of time.

2. Resiliency of service if no hot spare. One way to respond to mechanical delays or surges in demand on the line is to have a spare train on standby at Belfast Yard, for dispatch as required, to fill a gap, replace a failed train, or augment capacity. The only time of day that the presence or absence of a hot spare affects fleet size is the morning peak period, when 15 trains are required for scheduled service. If 15 trains are available for morning service, then a hot spare will always be available in the afternoon, when 14 trains are required for scheduled service. In my opinion, given the short length of our initial line and the time required to dispatch a standby train from Belfast Yaard, the injection of a train during the morning and afternoon peak periods could result in a repair to the frequency and capacity of the line only after the ridership has peaked. During peak

periods, it may be adequate to remove any failed train from service and respace the line with a wider interval. Standby trains will certainly have a value outside peak periods, when the number of trains in service is lower and the impact on service interval of a failed train removed from service is greater.

3. How to adapt to reduced availability of trains. I suggest that if there are fewer than 16 trains available, the first step would be to remove the hot spare during the morning peak period (reduces from 16 to 15 trains with no effect on service interval), the second step would be to remove one train from service in the morning peak period (reduces from 15 to 14 trains and reduces morning service to approx 3 min 34 s), and the third step would be to remove a second train in the morning and one train in the afternoon (reduces from 14 to 13 trains and reduces morning and afternoon service to approx 3 min 51 s).

4. Rideau Station east entrance. If the William Street entrance into Rideau Station were unavailable for a period after the opening of the line, there would be negative impacts on customer and possibly on operation of the system. The William Street entrance is the most convenient entrance for customers walking to/from the By Ward Market and vicinity and also destinations further east along Rideau Street. It is also the planned connection point for customers transferring from westbound buses on Rideau Street (Routes 5, 6, 7, 12, 14, 17, 18) and southbound buses on Dalhousie Street (Route 9 from Global Affairs). It may be possible to temporarily relocate the westbound bus stop closer to Sussex - this would need to be confirmed by OTC. Requiring all customers to enter through the other two entrances would put more pressure on the capacity of the elevators at the entrance opposite the Freiman Mall, would put more pressure on the pedestrian crossings of Rideau at William, Freiman, and Sussex, and would put more pressure on the west entrance from Colonel By and the Rideau Centre.

Please let me know if you need anything further on these points or related matters. Thanks.

Pat

Pat Scrimgeour

Director, Transit Customer Systems and Planning | Directeur, Systèmes-clients et Planification du transport en commun

OC Transpo

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