Ottawa Light Rail Commission

Matthew Slade
on Tuesday, May 24, 2022

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OTTAWA LIGHT RAIL COMMISSION

OLRT CONSTRUCTORS - MATTHEW SLADE

MAY 24, 2022

(Continued from May 5, 2022)

--- Held via Zoom Videoconferencing, with all participants attending remotely, on the 24th day of May, 2022, 9:01 a.m. to 11:54 a.m.

COMMISSION COUNSEL:

Christine Mainville, Co-Lead Counsel Member
Emily Young, Litigation Counsel Member

PARTICIPANTS:

Matthew Slade, OLRT Constructors

Mannu Chowdhury,
Paliare, Roland, Rosenberg, Rothstein LLP

ALSO PRESENT:

Judith Caputo, Stenographer/Transcriptionist
Alicia Sims, Virtual Technician

INDEX OF EXHIBITS

NUMBER/DESCRIPTION PAGE NO.

(None).

* * The following is a list of documents undertaken to be produced or other items to be followed up * *

INDEX OF UNDERTAKINGS

The documents to be produced are noted by U/T and appear on the following pages:

-- Upon commencing at 9:01 a.m.

MATTHEW SLADE: PREVIOUSLY AFFIRMED.

CHRISTINE MAINVILLE: Good morning, Mr. Slade.

MATTHEW SLADE: Good morning.

CHRISTINE MAINVILLE: As we've just indicated, you'll be testifying under the same affirmation as previously.

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: And pursuant to the same parameters, if you would like me to revisit any of them, please let me know but the same ones I read the last time.

MATTHEW SLADE: That's fine, thank you.

CHRISTINE MAINVILLE: Great.

So we wanted to discuss maintenance a bit more today, but I just want to ask you first about a couple of points I didn't touch on last time. The first being winter testing.

Do you recall whether any dynamic winter testing was done?

MATTHEW SLADE: So we were testing during winter. I've never worked on a job where there's been specific dynamic winter testing

undertaken. But on this project, on the Ottawa project here with the OLRT-C, we were undertaking testing for our winter of 2018 into 2019.

So, you know, whilst there wasn't a specific -- well, there were a couple of specific winter tests, dynamic ones, but they were very limited. There was only, I think, two or three. But otherwise, we were doing, we were testing throughout that period anyway. So all of the systems went through -- they went through all seasons, because we tested for at least 12 months. So I would say it was tested.

CHRISTINE MAINVILLE: Okay. And then there was the lab simulation testing; is that the NRC?

MATTHEW SLADE: Correct. That was done before I was there. But, obviously, I've seen the report. And that was for the onboard systems and the behaviour of the vehicle in both from minus 40 to plus 40.

CHRISTINE MAINVILLE: And were those results satisfactory?

MATTHEW SLADE: I believe so, yes.

CHRISTINE MAINVILLE: Okay. And you said you hadn't seen specifically focused winter

dynamic testing done elsewhere.

Have you been involved in environments like the one in Ottawa, in terms of the type of climate, winter climate?

MATTHEW SLADE: I have another project in Edmonton, which is relatively similar to Ottawa; and that doesn't have any specific winter testing requirements, either.

So there are, like I said, there are some limited tests that need to be done, that are either done to simulate winter, such that -- for instance, we have, as I'm sure you've probably heard, there are switch heaters on the guideway. The obviously active tests that they will operate during winter, and obviously if your testing period is not during winter when they are due to be tested, you can simulate winter with those. You can buy ice in a can, for want of a better term, you can get them down to the temperature that simulates minus 40 on all the sensors and all the equipment to make sure that they turn on and turn off. But we actually went through a winter.

CHRISTINE MAINVILLE: Right. So in hindsight, is there any more winter testing you might do, or would you still deem that sufficient

to run the trains and perform other testing during the winter?

MATTHEW SLADE: I think what we did was sufficient. I think with Ottawa being the way that it is environmentally, the fact that there wasn't any specific winter testing required, you know, in the Project Agreement, may have been a shortfall.

I don't know what's in the other project agreements for the other projects that they have ongoing at the moment, but I would have probably, as a result of what they saw on Confederation Line, maybe added something into those agreements.

CHRISTINE MAINVILLE: Right, okay.

MATTHEW SLADE: Ottawa is pretty unique, environmentally.

CHRISTINE MAINVILLE: Yes.

And going back to the pretrial running period, you spoke about that last time, how there were few days of pretrial running.

Do you recall if only single trains were being run during that time as opposed to coupled?

MATTHEW SLADE: We were running some coupled trains, but it was pretty limited.

CHRISTINE MAINVILLE: Okay. And then for trial running, do you recall an appendix to the trial running procedure setting out exemptions? Appendix C was --

MATTHEW SLADE: I think that was done -- I might get this wrong. I think that was done when it was amended. I think we drafted something with exclusions, but I can't remember that it was actually finally agreed with the exclusions in.

I think we drafted some exclusions, but I think through discussions with the City, I think we agreed that they weren't required. But I can't recall --

CHRISTINE MAINVILLE: Right.

MATTHEW SLADE: -- whether they were all removed, or whether some of them were removed, I cannot remember.

CHRISTINE MAINVILLE: They do appear in the first revision and not -- as far as we can tell -- in Revision 2, which is the final one dated July 31st, 2019.

So they were contemplated, I suppose, but maybe not part of the final document. But what were they? What's your recollection of what that

was?

MATTHEW SLADE: I cannot recall any of them off the top of my head, I would have to read the document.

CHRISTINE MAINVILLE: Okay. But is it -- were they things that were going to be left out of trial running, or you don't recall?

MATTHEW SLADE: I don't recall. I'm sorry, I have absolutely no recollection of what was in that appendix, I'd have to read it.

CHRISTINE MAINVILLE: No problem.

MATTHEW SLADE: If I knew what they were, I might be able to comment. But off the top of my head...

CHRISTINE MAINVILLE: Okay. The trains ran for a couple of weeks after trial running and before going into service, correct?

MATTHEW SLADE: Yeah.

CHRISTINE MAINVILLE: Would you have had any knowledge of how the trains were running at that point in time?

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: And how was that going?

MATTHEW SLADE: We had good days and bad days, I think is the polite way of putting it.

I don't know how to describe it, really. You know, inconsistent I guess is maybe the other way.

CHRISTINE MAINVILLE: Okay, right.

MATTHEW SLADE: There were challenges on some days. Some days were great, some days were not so great.

CHRISTINE MAINVILLE: Okay. And work was ongoing then, I suppose to fix that?

MATTHEW SLADE: Yes. You know, the vehicles were -- when you say "fix that"; you mean, to fix the performance or to fix the vehicles?

CHRISTINE MAINVILLE: Well, both if they were connected.

MATTHEW SLADE: Sure, I think as we touched on last time, the vehicles had retrofits that were required to be completed, they had minor deficiencies that had to be completed. But then, obviously, as they were being used, issues were arising, and those have to be dealt with as well.

So there was a constant, I guess, turn of vehicles that needed attention. And whilst they may have wanted to be doing retrofit work, if they had a failure on the line, they would then have to do corrective maintenance before they could do any of their preventative, or retrofit, or deficiency

work.

CHRISTINE MAINVILLE: And did any of this work, or retrofitting, require any retesting to be done?

MATTHEW SLADE: Some of it might have done. Well, maybe not the retrofitting, but some of the maintenance or deficiency work might have done.

CHRISTINE MAINVILLE: Okay.

MATTHEW SLADE: As soon as you disconnect something from the vehicle, you generally have to go through a level of testing to prove that when it's put back together, that it's still working the same way it was.

So there is, you know, whether that is back through -- I know you know we've talked about SPICO's and DPICO's, etcetera, etcetera.

So if key parts of the, either the train control system or something else that's been removed then, yes, it has to go back to a test procedure to validate everything is still working the same way as it should be.

CHRISTINE MAINVILLE: And so whenever retesting was required, it was performed before revenue service?

MATTHEW SLADE: I assume so. That would have been done by Alstom. And that was after -- you're talking about after revenue service, you're talking about the two weeks before -- sorry, yeah, after our revenue service availability, but before service commencement.

CHRISTINE MAINVILLE: Correct.

MATTHEW SLADE: So those vehicles were then being maintained by RTM and Alstom, so I wouldn't have had visibility of the paperwork to evidence that they were doing that, but I can't believe they weren't.

CHRISTINE MAINVILLE: Okay. And at that point in time, the vehicles were in the City's hands, correct?

MATTHEW SLADE: Correct. They had been sold. So when we achieved RSA, then bills of sale and car history books were transferred from, I guess from Alstom supplier to OLRT-C, and then from OLRT-C to RTG, then from RTG to the City, and then from the City back to RTM for the purposes of maintenance.

CHRISTINE MAINVILLE: Got it.

MATTHEW SLADE: But it's just a bunch of signatures on a document all that happen at the

same time, so...

CHRISTINE MAINVILLE: Okay, okay.

So going into operation, was there a sense that there may be some challenges in making the requisite number of trains available for service on any given day?

MATTHEW SLADE: I think every day was a challenge, because of that volume of work that needed to be done. I think there was, you know, sometimes the volume of work was increasing, you know, the list of issues was getting longer than the amount that were getting knocked off.

You have a limited number of hours available to do that work, and a limited amount of space. And I guess there was also limited resources.

I think -- and that's why, as we discussed before, having a soft opening would have been beneficial. Because it would have given them more access, more hands-on time to the vehicles to resolve those issues, and rectify issues.

CHRISTINE MAINVILLE: Do you recall an operational restrictions document?

MATTHEW SLADE: Yes. Not in detail, though, but try me.

CHRISTINE MAINVILLE: I'm sorry?
MATTHEW SLADE: I said not in detail, but I know it --
CHRISTINE MAINVILLE: No, I'm not going to quiz you on it.
MATTHEW SLADE: That's normal, right? All railways have them.
CHRISTINE MAINVILLE: Yes.
MATTHEW SLADE: They're a very common document. But they're unique to each jurisdiction.
CHRISTINE MAINVILLE: Right. And I just wonder whether you have any specific knowledge of whether it was passed on to RTM?
MATTHEW SLADE: Yeah, it would have been.
CHRISTINE MAINVILLE: By yourself, perhaps, or others?
MATTHEW SLADE: Either under letter from myself as the project director of OLRT-C, or purely by document control. But, yes, it would have gone to the City as the operator, and it would have gone to RTM as the operator of the system.
CHRISTINE MAINVILLE: Okay. Would you have any knowledge of whether RTM implemented anything applicable to them from that document?
MATTHEW SLADE: I would hope they did,

but I can't recall specifically what was in there that they may or may not have done, but they should have done.

CHRISTINE MAINVILLE: Do you think there was sufficient time for the maintainers, whether it would be RTM or Alstom, to review the documentation they received prior to going into operations, or whatever important documentation they needed to review, given how fast paced it was?

MATTHEW SLADE: You're talking generally, or are you talking about the operational restrictions document?

CHRISTINE MAINVILLE: Well, I would say let's start with the operational restriction document. But anything else you think would be critical for them to...

MATTHEW SLADE: So the operational restrictions document, there's been more than one version of it. It's released, a bit like the safety certificates for the vehicles, or for the signalling system.

So as the project progresses through, I guess through a trial running as we approached revenue service availability, and ultimately into service commencement, there were different releases

of that.

And then when certain software updates were done, and restrictions were removed, and when certain analysis was done, restrictions were removed. So that document was updated a few times in that, I would say month or two.

But whilst they might not have seen the actual document until they received it, they were party to the conversations about what was in it and what was being adjusted, or removed, or added. And certainly the gentleman who was, at the time, RTM in charge of yard operations, he works with me here at EllisDon, and I know that he was involved in those conversations.

So, yeah, I don't think that would have been -- shouldn't have been a surprise to anyone. And it shouldn't have -- it's not a large document to read or to digest, either.

CHRISTINE MAINVILLE: Right. And so would that be Claude Jacob, the person you're referencing?

MATTHEW SLADE: No, Murray Hill.

CHRISTINE MAINVILLE: Murray Hill, okay.

MATTHEW SLADE: He was the operations

director at RTM when we went into service.

CHRISTINE MAINVILLE: Got it, okay.

And do you have any knowledge of how information was transferred from RTM to Alstom for revenue service?

MATTHEW SLADE: No, that was -- I wasn't involved in that.

CHRISTINE MAINVILLE: Okay.

MATTHEW SLADE: I know that -- I mean, at the time, you know, most of the documentation that OLRT-C were providing to RTM, I think Alex Turner at the time was kind of keeping track of what we were handing over. And there was, you know, occasionally I'd get an e-mail from him saying, we really need this document or whatever, and we wanted to know where it was, or whether they had received it, or the latest version or whatever.

But, no, I had no idea how RTM were flowing documents down to Alstom. I'm pretty sure we provided, OLRT-C provided Alstom with access to our electronic document control system. So they had access to all of the documents. Aside from them being issued, stuff from RTM, they had access to our database.

CHRISTINE MAINVILLE: Okay. Who would

have been part of the systems engineering and systems assurance team for OLRT-C?

MATTHEW SLADE: So we had a few people that were within OLRT-C, and then we had an external specialist that we hired from the UK.

So internally within OLRT-C, that department was run, when I was there, by a gentleman called "Sean Derry". And Sean and I got along really well, but he's another ex-pat of the British Government. He's done a lot of system engineering around the world. And when I arrived they had already engaged with SEMP from the UK. And I've worked with them before in the UK, I've known Derek Wynne for a long time.

And so they were brought in to complete the -- that role of doing the system assurance and safety engineering.

CHRISTINE MAINVILLE: What's your view of the work that SEMP did and Mr. Wynne did on the project?

MATTHEW SLADE: In what regard?

CHRISTINE MAINVILLE: In terms of the level of competence and quality.

MATTHEW SLADE: Derek and his colleagues are, they're world class, okay? There's

not many organizations that do what they do. They carved themselves out a niche in the industry, globally. And I think -- and a lot of the individuals that work with Derek I know, and I've worked with before on other projects.

And I think there's, again, there's not many people that understand the engineering standards that they work to and that they fulfill their duties to. Which is why they were selected and brought in to work here in Ottawa.

CHRISTINE MAINVILLE: Do you know whether -- or what the City's plans were for running parallel bus service following the start of operations, and whether those plans changed in terms of the duration?

MATTHEW SLADE: I don't think any of their plans -- well, depends on what you mean when they changed. I suspect they changed when the RSA dates changed, as we discussed last time. But I think the City -- and I can't remember the date, but it's easy to find because it's in the media.

The City had a, I guess a specific date by which they have to notify their bus operators of redundancies, which would have triggered that date when the buses would stop.

They were very public about the date when the buses would stop, and I think that was also tied into their annual timetable change. So I think there was a lot of coordination with timetable change, and redundancies and reallocation of staff. Because a number of those drivers that were made redundant became EROs, train drivers.

CHRISTINE MAINVILLE: Okay.

MATTHEW SLADE: So I think it was driven partly by when they predicted the RSA date was going to be, and then they counted obviously backwards. I assume, that's how I would have done it. The RSA date is here, and you have to give however many notes some redundancy. And then, you know, when your timetable changes, because it's pretty much the same date every year or very close. But we weren't party to any of those discussions, that was just --

CHRISTINE MAINVILLE: You just knew from what was being announced?

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: Similarly, did you know, or when did you understand that service was actually going to commence on the date on which it commenced in September?

MATTHEW SLADE: I found out 14 days before.

CHRISTINE MAINVILLE: So at RSA, effectively, around there?

MATTHEW SLADE: Yeah. So again, I think it was the 30th of August, from memory, around that date.

So we were asked to facilitate a train ride for councillors and local dignitaries, etcetera, etcetera. So RTG and OLRT-C provided an end to end run on the line, at which was followed by a -- it wasn't a council meeting, but it was a meeting called by the Mayor where all those people that had been on the train, went into the council offices. And then the Mayor and John Manconi announced that it would open on the 14th of September. And that was the first I knew of it, when I sat in that room and they made that announcement.

CHRISTINE MAINVILLE: Did you have some concerns about --

MATTHEW SLADE: I was surprised at how soon that date was. Mr. Manconi had regularly stated in the media and the Transit Commission that he would need a minimum of four weeks between

OLRT-C achieving RSA, and service commencement. So that would have been four weeks, and they announced it was only going to be two weeks.

They had also sent us a letter via Michael Morgan, I want to say during trial running, which changed the service that we would go into service at. And in that letter, it said that they were anticipating opening in Q4 of 2019.

So in my head, I had assumed that it would be somewhere after October the 1st. So when they announced September 14th, I was a little bit surprised. That's me being polite.

CHRISTINE MAINVILLE: Would you have conveyed, or do you know if anyone on behalf of the consortium conveyed concerns to the City?

MATTHEW SLADE: I don't think we would have conveyed concerns to the City. It was a city decision. We probably conveyed concerns internally.

CHRISTINE MAINVILLE: Just going back to the documentation handover.

You would be aware of information from Thales being provided to the operator, OC Transpo?

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: So that would have been done through OLRT-C?

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: Okay. And do you recall -- sorry. Go ahead.

MATTHEW SLADE: We received regular releases of documents with, as I call, software releases, software builds. Every time a software release was done by Thales, we would receive documents highlighting what have changed. Documents including a new safety certificate, any new operating restrictions, etcetera, etcetera.

And those were transmitted from OLRT-C to the City. Now, it became apparent in some meetings, that the operators, OC Transpo, had not received those documents from City of Ottawa.

So it's a bit -- I know we've talked about some of our organizations having different heads. The City had two heads as well. So we would write and correspond -- OLRT would write to RTG, RTG would write to City of Ottawa. We didn't write to OC Transpo, it went to City of Ottawa. And it was then down to City of Ottawa to transmit that information internally within their organization. And it became apparent that that wasn't happening.

So I would have meetings with their

operations leadership teams, so Troy Charter, Matt Pieters, etcetera. And I'd say, "those documents were issued to the City." And they'd have been sat with Michael Morgan, as part of the City, and they'd be sat in document control somewhere without realizing, actually, this is quite an important document that the operator needed.

So there was a huge lag, quite often, in the City providing information internally to OC Transpo. And as soon as we knew, you know, if it came to light that they didn't have those documents, obviously, I would just e-mail a copy to Troy and his team in the control room, whoever needed it, just to say, "hey, it's officially been sent to the City. But here's a copy, because you need it".

But, yeah, I wasn't routinely -- we weren't routinely aware that when we sent stuff to the City, the City weren't routinely distributing it internally.

CHRISTINE MAINVILLE: Right, okay.

And you've just indicated, I think you send it -- is it through Michael Morgan, typically?

MATTHEW SLADE: Yes. So Michael Morgan was the City of Ottawa project director. So

generally correspondence went from myself as project director to Peter Lauch as RTG. And then RTG would normally send my letter with a covering letter saying, "please find attached" and that would then be sent to Michael Morgan. And it would be cc'd to a few other people, but generally, that was the correspondence flow.

CHRISTINE MAINVILLE: In the lead up to RSA -- well, during the testing and commissioning and then trial running, I take it track priority would have been given to those, the testing and those aspects of the process, more so than to RTM or Alstom for maintenance preparedness?

MATTHEW SLADE: So there is, on any job of where you have infrastructure, there is a process whereby you make applications for track access. Well, it has to be controlled because of the safe nature of it.

And the team that managed track access reported to me, and the person in charge of that team reported to me. I don't remember Alstom or RTM ever requesting access for maintenance before RSA.

CHRISTINE MAINVILLE: Okay.

MATTHEW SLADE: And it was -- I mean,

they weren't doing any maintenance, and we asked them to come and either participate, or witness, or to help them learn, and it was always rejected. So their involvement was exceedingly limited. Through their choice, not through us prioritizing our work over their work.

I think they only started to get involved during trial running, or just before trial running. When I say "just before", I mean a matter of hours before. But they were not, other than resources that we were paying for from Alstom, so OLRT-C, were paying for some Alstom resources to participate, because Alstom is a variation, they weren't supposed to be doing any maintenance.

So I hired, I want to say, maybe four or five individuals out of their future maintenance organization to come and participate in some of our maintenance pre-RSA. And some of those people had either quit before RSA, from Alstom, or some of them made it through to the -- belonged to the maintenance, but they were only -- when they were participating, they were participating as OLRT-C, because we had subcontracted them, in essence. Whilst they were an Alstom employee at the time, they were being directed and working for OLRT-C.

CHRISTINE MAINVILLE: What about congestion at the MSF? I take it there was a process there as well to prioritize who needed access, given all the work that needed to be done?

MATTHEW SLADE: I'm going to say 99 percent that the movements in the yard are Alstom's, right? They're not anybody else's. So they were responsible for producing a plan on a daily basis as to what vehicles they wanted moving into what location, where and when.

And RTM would facilitate that through the yard control. But very often what was expected, was not achieved, either because of last-minute changes or because the volume of moves that were required to be done could not actually be achieved in the timeframe that was required. And then when that was compounded then with vehicles that were not performing, that were brought in and were, you know, you ended up with trains out of position, vehicles that were not capable of being moved on their own, it was a very, very challenging environment.

CHRISTINE MAINVILLE: And so as between Alstom supply or manufacturers, and Alstom maintenance, was that up to Alstom to manage who

would get what trains to work on?

MATTHEW SLADE: So we only ever saw Alstom, we didn't see production -- at that stage, we didn't see production maintenance, warranty, whatever they want to call it. You didn't see that. You got a list of vehicle moves from Alstom, and that was it. What work they were doing on those vehicles, whether that was deficiencies, retrofits, or maintenance work, had no idea.

We were just facilitating moving those vehicles around the yard into different locations. So we didn't get a list from Alstom production saying, "we want these trains in these locations". We didn't get a list from Alstom maintenance saying, "we need trains in these locations".

We just got one list, with moves that were for us to implement.

CHRISTINE MAINVILLE: Got it. Were there any issues with spare parts, that you know of, going into RSA?

MATTHEW SLADE: Not that I know of. I'm just trying to think if there was anything. No, I don't think so.

CHRISTINE MAINVILLE: Is it typical in your experience to have this type of structure with

RTM having subcontracted the bulk of the maintenance to a subcontractor like Alstom?

MATTHEW SLADE: It's not uncommon. I think a lot of maintenance, generally, is subcontracted out from transit agencies. There are pros and cons, but it's not uncommon.

CHRISTINE MAINVILLE: Did it cause challenges here for Alstom maintenance not to have a direct link to OC Transpo as the operator?

MATTHEW SLADE: I don't think it affected Alstom necessarily. I think, I mean, it's -- it's difficult. I think the, you know, it's one of those things, I guess if it performed well, we wouldn't be having this conversation, so it wouldn't be an issue, right?

I think -- yeah, I mean, it's hard to answer that one, as to whether there's pros and cons to them -- I think we now, they are now included in most of the conversations directly with the City. But that's more through RTM and RTG almost forcing Alstom to be present, rather than Alstom wanting to be present.

It's convenient for them to have issue of it by RTM.

CHRISTINE MAINVILLE: Are you aware of

any challenges early on in operations with Alstom's system, Alstom maintenance systems not communicating with the City's IMIRS system?

MATTHEW SLADE: IMIRS. Vaguely. I have, you know, I can't tell you specifically what I remember. I know there were conversations around the different systems that the organizations used, and consistency of what is being put into those.

There was also, you know, it was clear in those early days that what people were writing down into work orders, or into those systems, were generally, generally only meant anything to the person who wrote it, which is never helpful, but that is something that comes with time. You've got to be able to write things that are transferrable to any individual that picks it up and reads it. Some of those very early ones, you could read it and you can give it to five different people, and five different people would understand something different from it.

But with regards to the systems, I don't have any real recollections.

CHRISTINE MAINVILLE: And the issue you just spoke about, I take it that's a matter of experience, not having a mature operator, a mature

maintainer, perhaps?

MATTHEW SLADE: Yeah, possibly. And the way people explain. Because I guess some of it is input by the individuals, and some of it is recorded by our help desk. So it's all down to, you know, protocol and experience, yeah, I guess.

CHRISTINE MAINVILLE: What knowledge did you have of the maintenance plans, or perhaps you only got that once you were with RTM. But do you have a view about the level of planning and adequacy of the plans?

MATTHEW SLADE: So I'll go back a little bit of the way. So OLRT-C were responsible for writing high-level operating procedures, and that included some maintenance procedures.

So those were issued by OLRT-C to RTM, and RTM then reviewed and accepted those, and they then took those and created their own documents.

OLRT-C provided operations and maintenance manuals for all of their systems and equipment that were provided as part of the construction contract. And those generally included maintenance procedures from the original equipment suppliers, the OEMs.

So it would tell you how to maintain a

CCTV camera, or this, that or the other. And RTM and Alstom were generally trained in all of those manuals and equipment. But then the actual plans themselves, some of them I probably saw once I was involved with RTM. But not for review or comment, just to know, you know, something came up and I said, oh, it would be good to see the plan and I'd get visibility of the plan.

I haven't seen many, or any of the Alstom ones. But I know that RTM reviews those and audits those, but they didn't get them routinely, I guess. So visibility of those had been limited, I would say, my personal opinion.

CHRISTINE MAINVILLE: You mean the visibility during -- even since the start of operations on an ongoing basis?

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: Do you know why that is?

MATTHEW SLADE: Well, I haven't asked for a lot of them. Some of them I've asked for, and some of them I've seen. But I mean, they exist. But I think, I think -- generally, I think RTM only sees them if they are undertaking an audit against them.

So if they're going to do an audit for Alstom against the maintenance plan, but I suspect, I don't know, were those plans -- whether the Alstom plans ever went to RTM for acceptance, I don't know.

They would have gone to the maintenance director, anyhow. They wouldn't have come to me.

CHRISTINE MAINVILLE: Okay. Could we speak about some of the breakdowns and then the derailments that occurred after service?

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: Perhaps we could start with the flat wheels --

MATTHEW SLADE: Okay.

CHRISTINE MAINVILLE: -- and whether you have an understanding of what caused that problem?

MATTHEW SLADE: I do. So I mean flat wheels are something that all railway systems suffer with; it's not something you can avoid. The only thing is how you manage them or, you know, I guess deal with them.

So we were having flat spots occur, which comes as a result, generally, of an emergency brake application on the train. And I guess it

became an issue, because we have a machine at the maintenance facility called a "wheel lathe", which takes wheels that have flat spot, and turns them and makes them perfectly round again. We had an issue with the wheel lathe, which then highlighted the number of vehicles that had flat spots. Because we had a lot of trains that were out of service because of flat spots. And the wheel lathe can only do so many wheels and so many trains at a time. So there was a, in essence, a backlog of vehicles that needed to have their wheels trimmed.

And so it was being managed, but until that machine then had a few issues, it became abundantly clear that we were probably having more flat spots than we would have anticipated.

So we pulled together a team of people to look specifically at flat spots, including some external consultants. And there were a number of -- whilst the root cause is emergency brake application of the vehicle, there are lots of different triggers to cause a vehicle to emergency brake.

So lots and lots of data was analyzed, because every time a vehicle emergency brakes, that's recorded in the data logging system on the

vehicle, and on the signalling system, so it was all reviewed. And the number of changes were recommended and made to reduce the number of emergency brake applications.

And some of those were software adjustments within the Thales signalling system.

There were changes to the guideway intrusion detection system, which also has the ability to trigger emergency brakes.

And then there was some changes to, on the braking system on the train, with regards to how it performed at different temperatures, ambient temperatures, weather-related.

There were changes to the sand and the sand supply system that's used for adhesion on slippery tracks that's delivered via the train.

And then there was a, for want of a better term, a re-education to OC Transpo on how to utilize the Thales train control system in different rail adhesion conditions.

CHRISTINE MAINVILLE: And the weather-related one you mentioned, do I understand that that required a change of setting on the operator side, in terms of the controls?

MATTHEW SLADE: Yes. So I'm going to

get a bit techie now, so stop me if it doesn't make sense.

The OC Transpo operate the trains and the system from the TOCC, the train operations control centre -- or Transit Operations Control Centre, which is just along the road from the maintenance facility. In there is also the computers that drive everything, and that's where the operators sit that control the system.

Part of the Thales train control system, part of the ATS, the automatic train system, there is the ability to apply different acceleration and braking rates to the vehicles.

And that is -- it's a very simple system for the operator. I mean, it's very technical on the vehicle, but for the operators themselves, they basically have three settings that change the parameters of the back brakes. It's a case of literally selecting one of those three settings, depending on how the vehicles are performing on the main line.

So, I guess the easiest way to describe it is a bit like ABS in your car. If your wheels lock up, you know, you're sliding, it changes the performance of the brakes. That's the sense of the

thing, it predicts -- you find that -- it applies the same amount of braking force, but it does it over a longer period of time, so rather than it coming to a sudden stop, it drives gradually to a station. A bit like when you're driving in your car in winter, you know what braking distances are, you increase your braking distances because of the slippery conditions of the road. And that does it, because the trains brake and accelerate on their own; you just select one of those three settings on the train control console and that applies it across all of the fleet on the guideway.

And that is something that OC Transpo wasn't doing, and they now routinely do it every single day.

CHRISTINE MAINVILLE: Now, are you aware of, earlier, with requests to the City to change that profile?

MATTHEW SLADE: The conversation about changing brake profiles is separate.

Those three different settings that are in the Thales system are -- they're not something you can adjust, they're fixed. So it applies -- crudely, I'm going to say you have 100 percent

braking and acceleration rate, 75 percent and 50 percent, and then, depending how slippery it is, you select which one you want to use.

There was a separate conversation, which I think is what you're alluding to, around changing the braking rate on the vehicles.

CHRISTINE MAINVILLE: Okay. So that's --

MATTHEW SLADE: An actual engineered change to the performance of the brake system on the train, which is not necessary.

CHRISTINE MAINVILLE: So the conversation that did happen with the City about changing the brake rates --

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: -- that, you're saying, is not connected to the emergency braking wheel flat issue?

MATTHEW SLADE: The City believed it was, but it isn't.

CHRISTINE MAINVILLE: And so why did it need to be changed from a --

MATTHEW SLADE: It didn't, and it hasn't been.

CHRISTINE MAINVILLE: Okay.

MATTHEW SLADE: The brake rate on the vehicles is still the same as it was from the first day the trains ran. What is different is the fact they are now using the Thales system the way it should be used, to adjust that percentage on a daily basis.

CHRISTINE MAINVILLE: Right, okay.

MATTHEW SLADE: We have never, ever changed the actual vehicle braking performance.

CHRISTINE MAINVILLE: Okay. Do I understand that the City was -- or OC Transpo was not initially changing the rate on a daily basis?

MATTHEW SLADE: Correct.

CHRISTINE MAINVILLE: Was that discussed with them earlier on?

MATTHEW SLADE: Yes. Numerous times, it was -- requests were made to use that function, and it wasn't being used.

We were trying to explain to them that if they used that function, it would benefit the performance of the railway. And eventually they agreed to. I don't know why it changed, why eventually they agreed to do that.

I think the argument for and against it was about the overall trip time, how it would

impact the journey time for the passenger, which the City was very, very sensitive to over the -- you know, over the, I guess, reliability of the system.

So they would rather have had an end-to-end journey time and suffer flat spots than potentially slow the system down to reduce the number of flat spots and then -- I mean, the difference, the overall difference -- and I think that's what did it in the end, was we said, look, time the train using the three different modes of -- in the Thales system.

And not many passengers obviously ride from one end of the line all the way to the other end. Most of them get off at one of the intervening stops. But if you went across the entire alignment, on a day when the 50 percent rate was applied, I think it adds something like less -- it's certainly less than three minutes, and it's probably closer to a minute on your overall journey time across the entire line, which a passenger generally wouldn't notice.

CHRISTINE MAINVILLE: Okay. And when you say you had an issue with the wheel lathe, was that just because it couldn't keep up with the

demand? Or were there actual issues with the lathe itself?

MATTHEW SLADE: A lot of it was down to the way it was being operated. So it was being used too aggressively, let's say. So the speed at which you turn a wheel, the machines are sensitive to, and so you're supposed to take your time to do it. But it was, I think, because of the backlog, people were trying to go too fast. And we had a issue with build-up of swarfs inside the machine and the machine was not capable of coping, the way it was being used. But it wasn't being used, let's say, appropriately.

CHRISTINE MAINVILLE: Okay.

MATTHEW SLADE: So, again, you know, we had service engineers out. We retrained some staff. And it is what it is.

CHRISTINE MAINVILLE: Was that under OLRT-C warranty, or was that performed by the maintenance teams for Alstom?

MATTHEW SLADE: I think, initially, OLRT-C brought in the equipment supplier. They came in from Germany. We had a few issues with getting them over and visas and etcetera, etcetera. And then we ended up adding in a, for want of a

better term, a WiFi connection into the unit so they could access it remotely from Germany, to save them from flying out.

But then, after that, I guess one of the things that I've lobbied for, for a long time, was for RTM to have a millwright in their organization, someone to look after all of the equipment in the maintenance facility. And eventually, they did recruit one in the end and so it was the -- and we're talking months apart, but then, you know, those machines are now maintained internally by the millwright.

CHRISTINE MAINVILLE: Could you speak to the cracked wheels?

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: So these started being observed in July 2020.

MATTHEW SLADE: Okay.

CHRISTINE MAINVILLE: And then could you speak to your understanding of what the cause of that was?

MATTHEW SLADE: Sure. So, I can't remember the specific date -- I'm sure you have it there -- so, I received a phone call one evening from the project director at Alstom to say, "Hey,

guess what? We got a bit of an issue that you need to be made aware of." And it was the fact they'd found a cracked wheel.

And I, unusually, I guess it wasn't normal for me, but it was a serious issue. So I phoned John Manconi personally and said, "John, you need to understand we're -- we've got a big issue and we need to stop trains and start inspecting wheels."

And so we started a fleet-wide inspection, and I'm pretty sure TSB were called in as well by the City to help inspect. So, some components of the train, bogies, were quarantined until the TSB could arrive. And we went through a deep review, and it turns out that it's -- essentially, the cracks were induced as a result of a setscrew being installed in the wheels when the wheels were originally assembled onto the bogies.

Those setscrews didn't need to be there. They're there for the purpose of removing the wheels from the train. They're a maintenance tool that get delivered with the wheels to the assembly. And they were -- some of them were protruding through the wheel such that, when the wheel was bolted onto the hub, it was putting undue

stress into the wheels and causing the cracks.

Those setscrews should either have been completely removed before the trains were assembled, or at least backed off such that they weren't protruding through the wheel, and replaced with a plug. So they were in there to stop -- essentially, obviously, trains are dirty, they get very dirty very quickly from running on the railway. So you either normally have a plug or something over the holes so the holes don't get filled with dirt and grime. So when you do want to put those setscrews in for the purposes of maintenance, that you can get them in easily.

But there ended up -- as I understand it, there was, I guess, a gap in communication -- when I say "communication," I mean documentation -- whereby the wheel supplier didn't write in their documentation that these were to be removed before being installed on the trains. And there was then, also, I guess, a gap in Alstom's procedure that didn't tell them to remove them or check that they were backed out such that they weren't protruding through the wheel.

So these wheels were put on the trains and then, obviously, the amount of torque that goes

through a lug nut or a wheel nut on one of these is immense, and it's created a stress fracture around the setscrew hole. So all of those wheels had to be regularly inspected for cracking until such time that the wheels could all be replaced.

CHRISTINE MAINVILLE: Right. That was the proposal put forward to address the issue, to get the fleet running again pending replacement?

MATTHEW SLADE: Yeah. It was referred to as the "Green Wheel Program," I guess. So we deemed red wheels ones that were cracked and couldn't go into service and green wheels ones that were good, so... And they were inspected on a -- I can't remember the frequency of dates, but they were inspected, I think every three days, something like that, until such time that they could be -- the wheels could be replaced.

CHRISTINE MAINVILLE: Did the City not at some point not allow the trains to run if they had red wheels?

MATTHEW SLADE: Well, it only became -- it became more of an issue for them, I'm going to say after the derailment, more recently, when we went back into service as part of the return-to-service plan. They then changed the

position where they had been saying that some trains could go into service with a red wheel. And they stopped that, and they said, no red-wheeled trains, which was, I think, perfectly reasonable. I think it took Alstom far too long to replace all those wheels.

You know, it was -- I know we were in COVID and there was probably supply chain issues, and it's also a large order that is, I guess not necessarily normal, but, yeah, it took -- we should have changed those wheels far quicker.

CHRISTINE MAINVILLE: And is that now completed?

MATTHEW SLADE: I think we might be on the last train. If it's not all done, then there's one to do.

CHRISTINE MAINVILLE: Okay.

MATTHEW SLADE: It's 99 percent done.

CHRISTINE MAINVILLE: Okay. Do you recall some track buckling?

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: Likely the summer of 2020?

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: So what was the

cause of that?

MATTHEW SLADE: So, sun kinks, as we call them, or track buckling, is, again, something that is normal for ballasted track. So you don't get it on slab track, you don't get it on concrete direct fixed track, but you get it on ballasted track.

Again, it's not an uncommon thing to experience. And, again, I think the manner in which it is managed and dealt with in Ottawa is probably -- again, I think they're probably getting better at it, but the -- I guess in the first couple of years, the way they managed and dealt with that was not ideal.

CHRISTINE MAINVILLE: How so?

MATTHEW SLADE: Well, I mean, it's difficult, right? So everyone -- the political and public pressure is, you know, this thing shouldn't ever happen, but you can't -- it doesn't work like that. The track moves constantly, all day, every day; 365 days a year, the track is moving. It's a live piece of infrastructure.

And the track in Ottawa is more prone to movement in the summer than the winter as a result of the requirements of the PA. And I think

the guideway techs from Alstom Maintenance and the way in which they are instructed to deal with temperature-related track movement is, and has been, challenging. And the City giving them access to the guideway during the day, and the amount of maintenance that gets done on the track has probably been insufficient to minimise the amount of movement.

CHRISTINE MAINVILLE: And what in the requirements in the PA make it more prone to movement?

MATTHEW SLADE: So there's a -- and I can't tell you exactly what the clause number is, without going and looking for it. So there is a clause in the Project Agreement that requires rail brakes, as a result of cold weather, to be a specific -- no more than a certain size.

So, light rail vehicles have smaller wheels than a CN or CP or a GO train type vehicle, like, the wheels are a smaller diameter. And as a result, if a rail breaks in the winter, which is not uncommon because of the stressors in the rails, you want to make sure that, if they do break, when the gap opens, that a wheel can still go over it so the risk of derailment in the winter is far

reduced.

So, as a result of the PA being prescriptive as to how big that gap can be in the winter, that means that to design a stress-free protection for the rails means that, in the summer, you're going to be more prone to movement as a result of protecting the rails against bigger breaks in the winter. Which I think is sensible, because, generally, rail breaks generally happen in the winter, when the tracks are colder, and they generally happen, obviously at the coldest point in time, which is normally overnight. And a broken rail is not necessarily an easy thing to see in darkness, and yet a kink in the middle of the day in summer is obviously visible to a train operator, to a driver.

So if it's a kink, they can always -- you know, they could potentially slow down or they can at least report it before it's too late, whereas a break in the winter is a harder thing to manage.

So that's why the PA is the way it is, but that has inherently resulted in having a track formation, a track design, that is more susceptible to movement in the summer.

CHRISTINE MAINVILLE: Are you aware of any -- of the track perhaps being more suitable for heavy rail than light rail?

MATTHEW SLADE: So it is, I would say, a little bit unusual for this type of vehicle to run on ballasted track.

So this, we talked last time, it's what's called an LRT, a light rail vehicle. Apart from being a low-floor vehicle, it's actually pretty much what we refer to as a streetcar or a tram, it's designed to run in the street, which obviously you don't have ballast and ties.

So it's the track form that is dominantly, I think at least 50 percent, if not maybe more than 50 percent, is ballasted, is -- it's not ideal. It's not normal for a vehicle like this to run on track like that. It doesn't mean it can't, because obviously it can, but ballasted track requires, obviously, maintenance.

And, again, the Project Agreement for Ottawa requires the track in Ottawa to be maintained to a Class 5 standard, which is actually far higher than what the railway actually is. So the standards that the City require the track to be maintained to are in excess of what that track

would normally be maintained. Does that make sense?

CHRISTINE MAINVILLE: Do you mean the agreement, then, does set out enhanced maintenance requirements?

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: But why would that track have been used if there is a track more suitable for this type of train?

MATTHEW SLADE: Again, that might also be in the PA. I can't remember off my head whether it specifically stated ballasted track or not. I'd have to check the PA as to whether or not it was done because the PA required it or whether it was done because that's what the designer selected.

CHRISTINE MAINVILLE: Could it have had to do with the fact that the PA required or pointed to the AMIRA standard?

MATTHEW SLADE: AREMA.

CHRISTINE MAINVILLE: AREMA, sorry.

MATTHEW SLADE: Yeah, it might be. I would have to read up, go back through the track section of the PA to familiarize myself with what it says in there.

But I think the only thing that -- you

know, and I was involved with a lot of conversations with the City about changing the neutral temperature of the track and understanding how we can make it less sensitive to hot weather, etcetera. The City is actually -- so, on the two contract -- on the east-west extension, they have a different -- they've changed the PA clause on that job. So I think they recognized the rail break. And our engineer, the OLRT-C track design engineer, wrote a paper on the need to change that clause about the size of rail breaks.

But I think, at the moment -- and then some work with RTM in looking at maintenance practices and, you know, good standards from elsewhere in Europe where this kind of track is used more commonly. And I think we're quite comfortable at the moment with enhanced -- you know, doing more maintenance and ensuring that the track is in its best condition it can be, such that these temperature fluctuations have less of an impact on it.

CHRISTINE MAINVILLE: And just to have it, do you know what type of tracks would have been more suitable in this case?

MATTHEW SLADE: What we call slab

track.

CHRISTINE MAINVILLE: Slab track, okay.

MATTHEW SLADE: Yes, which is, you know, essentially concrete rather than -- concrete with direct fixation, rather than a ballast and ties.

So, some of the job is. So, the tunnel is all slab track. Down at the west end, Tunney's, is slab track. So there are sections of slab track. All the bridges are slab, which can't be generally done with ballast on bridges, but that's more normal for a streetcar-type vehicle.

CHRISTINE MAINVILLE: And then is it possible that this track-wheel interface might have caused some of the vibrations that were encountered?

MATTHEW SLADE: Yes. So you get, again, I'm going to say a phenomenon, you get a -- it's not really a defect. You get a track condition known as corrugation, which essentially creates a wave from the head of the rail such that you end up with vibrations being transmitted into the vehicle. But the wave effect on the rail comes from the vehicle in the first place, partly the vehicle and partly the geometry of the track. So,

the alignment of the track, OC, as you probably know, has some tight curves in it. And corrugation, you can't ever prevent it. You can reduce the likelihood of it propagating, but you can't prevent it.

The best way of managing it is to do regular grinding of the rails, to keep the head of the rail in as smooth a condition as possible, and to ensure that the wheel-rail interface is optimized so the profile of the wheel is best suited to the geometry and the alignment of the track, and to ensure that the rail is suitably lubricated such that the wheel and the rail interface has a good lubrication system.

So the job has a couple of areas where there has been corrugation, and it got very bad, I would say in 2020. Yeah, I think it's 2020. And then there was some geographical grinding in specific areas, where we had bad corrugation. Then there was a more extensive grinding program. But it's something that needs doing annually, grinding, that is.

And we know that the vibrations from the corrugation were having a detrimental impact on some of the components of the vehicle.

CHRISTINE MAINVILLE: Okay.

MATTHEW SLADE: But that was down to Alstom to maintain the track and prevent the corrugation or minimise the corrugation. They didn't, and the byproduct of that is they have increased maintenance on their vehicle.

CHRISTINE MAINVILLE: And aside from the issues already mentioned, would the choice of track have had other implications for how the trains ran or issues encountered?

MATTHEW SLADE: No, I don't think per se the track is the problem. The track is relatively standard. It's standard rails, it's standard -- it's not unusual.

Some of it, some of the curves are on the tight side for the speeds. But that was again, I guess, the alignment was dictated by the City. They chose where the stations were going to go and they chose the alignment between the stations, so it is what it is. There's not much you can do about that. But you can manage those rails and the track through maintenance regimes. It's all manageable.

But, otherwise, I think, you know, I don't see -- there's no specific issues with the

track.

CHRISTINE MAINVILLE: Okay. What about the derailments in the yard at the maintenance facility? Do you know why those would have occurred?

MATTHEW SLADE: The ones specifically with the light rail vehicles, or are you talking about all derailments? Because we have equipment in the yard that occasionally derails as well. Or are you talking about the trains?

CHRISTINE MAINVILLE: Well, are they caused by different things?

MATTHEW SLADE: Sometimes. I mean, the issue, again, in the yard, so the tightest curves we have are in the yard.

Generally, the speeds in the yard are slower, which, contrary to popular belief, it actually increases your likelihood of derailment, especially with wheels that are freshly turned on a lathe, which obviously it's in the shed, and then it comes out the shed. Fresh wheels, tight curves, slow speed, it actually increases the risk of derailment.

There was -- the vehicles were -- so the lubrication of the rails comes from the

vehicles, it has an onboard lubrication system. The vehicles were not lubricating in the yard at all. So up until -- I can't remember when -- a year and a half ago maybe, two years ago, I can't remember when it was -- there was no lubrication being applied in the yard, which increases the friction on the wheels to the rail and increases the likelihood of the wheels climbing off the rails. So there's a number of things that are contributing factors to the derailments in the yard.

RTM has installed a wayside lubricator that automatically lubricates the rails now.

Alstom were -- as a result of the derailments, Alstom were manually greasing the rails with a -- you know, walking on the track with a brush and tub of grease and were greasing the rails. RTM installed a wayside lubricant so somebody didn't have to do it manually.

And they've changed their practices on how they move trains and where they can and can't stop. And so, yeah, hopefully, the things that are in place now will reduce the likelihood of derailments in the yard. I won't say stop because I don't think you'll ever stop it. All railways

have derailments, and I know people don't like hearing that. But if you look statistically at how many derailments there are a day, around the world, it's a huge number. So they are inevitable. It's just you just got to try and reduce the likelihood of them occurring.

CHRISTINE MAINVILLE: Are you able to speak to some of the power supply failures, I think related to the line inductors?

MATTHEW SLADE: So, yeah, I mean, we haven't had power supply failures per se on the system. So I think the overall power supply, the traction power supply system, so the TPSS's, as we call them, which are dotted along the guideway, and the OCS has been pretty reliable.

The vehicles had a few power-related issues, and they're not all the same. The ones you've just mentioned with the line inductor, line inductors are a huge electrical winding that goes on the roof of the train. I say "huge," I mean, it's probably a metre by a metre and it looks like a coil.

And we were having a lot of arcing and flashes and issues, predominantly in the fall and the winter. And after much investigation, it

became apparent that the line inductors were not of the highest quality. They had manufacturing issues for that particular component. So the insulation that was on them wasn't perfect, and so you were getting electrical arcs. And you were getting a build-up of dirt on the roof of the trains that was also affecting conductivity. And there were short circuits happening as a result of those things.

And so they -- Alstom has -- I don't know whether they changed the supplier or whether they just went back to them and went through a new QA process to have the insulation better, and better installed. They changed the framing that they're on to help increase insulation, and they now have put a lid on it, for want of a term, an enclosure over the top of the line inductors that they didn't have before, to stop dirt and grime getting in there.

So all those things have been done now. I don't think we've had a line inductor failure since those remedial works were done.

There's other electrical issues as well. We had -- before revenue service, we had -- there's a line contactor on the roof. I think we're on revision four of that component now that

had various different issues with it, again, as a result of the supply of the component.

And then I guess the biggest one -- well, I don't know whether it's bigger than the line contactors, the line inductors -- it probably is -- is the issue with the auxiliary power supply, the APS or CVS, depending on whether you're speaking French or English, it's either the CVS or the APS, which provides the auxiliary power supplies on the roof. And that's component that's manufactured by a company called Additel, and we have an ongoing issue with those that they are failing on far too frequent a basis.

And Alstom are now looking at changing the supplier of those pieces of equipment.

CHRISTINE MAINVILLE: And these quality supplier issues, are these typical? I mean, I take it there are always some, but are there more in this case?

MATTHEW SLADE: Yeah, there are more here, and I think we touched on it last time when we spoke.

I think certainly the line inductor and certainly the APS, the suppliers of those components both changed for this vehicle as a

result of the Canadian content requirement in the PA.

So, if you bought a Citadis in Europe, those components would have come from a different supplier. And I think -- so the line inductors were made down in America, I want to say in New York State. I can't remember the specific location. And the APS's are from Québec somewhere, a company called Additel.

And I think, you know, inherently, I think the other thing that we touched on last time as well is the fact that this train runs at 1,500 volts instead of 750 volts. So, I think, when you compile all those things together, you probably compound the issue.

Having said that, I think generally Alstom has a pretty good quality control system even on their supply chain. And I don't know why there was -- why maybe these key components haven't had that level of rigour. Maybe they had it initially and then -- but I think it's not the same as using the same supplier that they used for every single vehicle elsewhere in the world.

CHRISTINE MAINVILLE: Right. And you said the OCS, the overhead catenary system, was

pretty reliable, but there were issues with that system, correct?

MATTHEW SLADE: We've had a couple of issues. And, again, I know the public and the media and politicians see them as major. So we have -- one thing that we've had a few issues with is failure of a component called a Parafil, which is a -- it's a cable, not an electrical cable; it's actually an insulated cable. It's essentially a rope with a rubber sheath around the outside. We've had a few of those fail.

We did some analysis. We had a couple fail during construction, and they were suffering with a form of corrosion, actually, on the rubber which came from or appears to come from -- and only affect the Parafils that are near to road bridges that go over the railways. And it looks like the -- some of the chemicals that they put into the grit and salt that they put on the roads in the winter, actually, when that turns into mist and is sprayed up into the air by the vehicles going -- road vehicles going along the roads, it then, actually, it settles on those components. Then, with the amount of electricity that's running through those adjacent electrical cables, you end

up with this fatiguing and corrosion on the rubber.

So they are supposed to be cleaned annually. In the maintenance manual from the supplier, it says they should be cleaned annually. They weren't being cleaned annually, routinely, by Alstom. So, during that first big shutdown that we had, RTM went through and cleaned them all and replaced any that looked like they had any issues with them.

Any that have failed have generally been replaced with one that has a larger diameter, so it has increased strength. And like I said, it only appears to be affecting certain ones. So, some of those have failed, and we've had -- I think we had two failures this year. But again, Alstom has got far better at responding to those and being able to replace them. So, when one does fail, instead of taking hours or days to replace or fix, they're generally fixed within, you know, half an hour or an hour or whatever. So the response times got better on those.

Then the only other issue that was -- again, the language that people use, it's not helpful or correct when they talk about the wires coming down. We had an issue at St. Laurent

station -- I'm trying to think when it was, maybe January of '20, January or February of '20, where in the tunnels we actually have -- instead of having catenary that is strung, it's actually in a rigid rail. And a piece of the contact wire had been pulled out of the rigid rail. Not much of it, and it was pulled out by a train.

We don't know a hundred percent what caused that, whether it was a bolt that held the rigid rail to the soffit at the tunnel or whether it was the tail of the contact wire that comes out the end of the rigid rail, whether that had been bent through use such that it interfered with the pantograph on the train. You'll never be able to prove which one it was. But that caused an issue with power at St. Laurent and then required a section of that to be reinstalled. But those are the only real issues that we've had.

The other power issues that we've had have come as a result of the train. So with those line inductors and APS's, depending how they trip, they have the potential to actually put power or put short circuits into the system, which then trips the OCS. So a majority of it has been vehicle-based, but we have had some instances with

the OCS, but nothing that I would say is particularly drastic or systemic or, you know, it's -- with improved maintenance and more frequent maintenance, those issues should reduce.

CHRISTINE MAINVILLE: In terms of the annual maintenance you referenced, you said RTM ended up cleaning them, even though, as I understand your evidence, it was part of Alstom's scope?

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: In terms of the switch and sensor issues, there were switch failures particularly in the winter of 2020.

Do you recall whether those were due just to snow?

MATTHEW SLADE: So, I don't -- again, I guess it's how stuff gets described. We haven't had any real switch failures. So, the switches are made up of a series of systems. So, you have the actual mechanical switches, which are the rails that transfer a train from one set of tracks to another set of tracks. They are connected to a motor and a set of rods which is part of the Thales signalling system, the switch motor. And then independent of that, you have a switch heating

system, which is there to reduce or prevent snow and ice build-up.

The majority of the issues that we were having were -- I'm going to say probably more than 90 percent were in the winter and as a result of snow and ice. And so it wasn't the switches themselves, it's more related to the heating system.

Again, the heating system has been replaced on some of them. Personally, I don't think that was required. I don't think the heating system was being maintained appropriately and I don't think it was being operated appropriately, which is why I think we were having all those issues. And the fact that they are -- the fact that the new heaters are -- everything's got, I'm going to say a little bit better. We still had disturbed switches this winter, even with the new heaters. It's all about knowing how to maintain and use the equipment that was designed and installed. So I think there's, again, learning curves that we're still going through, from all sides.

But there were -- some of those switch heaters did have sensor issues and a few other bits

and pieces. But, you know, if I had been operating or in charge of the system, I probably would have run it differently. The heaters were going on and off with snowfall. Well, by the time snow is falling, it's too late. Those rails should have been heated well above ambient long before snow started. I wouldn't turn the heaters off throughout winter, I would just leave them on.

CHRISTINE MAINVILLE: So they were being turned off?

MATTHEW SLADE: Oh, they were on a sensor so they were automatically going on and off, either with -- depending on what the ambient temperature was or depending on what the snowfall was. But the temperature of a rail, which is obviously a large piece of metal, is -- when it's cold, it's a lot colder than ambient; and when it's hot, it's a lot hotter.

When we were talking about the rail was moving in the heat, earlier, if ambient temperature is 30 degrees centigrade, the rails are probably going to be close to 50 degrees centigrade. Conversely, in the winter, if it's minus 20, then the rails are probably at minus 30.

The heating system, I think, that we

had probably was sufficient. It was easy for people to say it wasn't, but I don't think routinely we were -- (a) they weren't probably maintained appropriately before winter started. And, you know, people just don't really -- naively think, oh, well, you know, it's a bit like your furnace in your house or whatever: It worked last year, I'll just turn it back on, it will work this year. Those things need regular maintenance, especially when they're not used often.

And I would have run them a lot longer. I wouldn't necessarily have used the sensors. You can override them manually from the control room. I would have turned them on and off, depending on the weather forecast or -- it's a bit like winter tires. You put them on when it's minus seven or it's seven degrees, and you take them off when the spring comes. You could quite easily do that with those and you'd probably have saved a lot of heartache that we went through.

CHRISTINE MAINVILLE: And were some of these issues experienced during the winter preceding RSA, so when testing was happening?

MATTHEW SLADE: Yeah, there was, we did have some issues. And we modified -- OLRT-C

modified some of those switch heaters to improve performance. We learned that actually where the heat was directed affected -- you know, improved the performance of the switches.

Again, you're asking two big bits of metal to bend when you force the switches to move. So, obviously, the colder they are, the harder they are to move from one side to the other. That's part of what the heat does, apart from melting snow and ice. And I think, you know, we modified those heat ducts. We did a few things to improve them. And we learned through that period about how to maintain them, about replacing heating elements, replacing fans, and all that sort of stuff.

We talked earlier about Alstom not participating in advance of revenue service. If they had been out there that winter with us, with us being OLRT-C, checking all that equipment and checking and replacing those components, they'd have known what they needed to do, you know, or been more, I guess, more skilled and more knowledgeable on the assets.

CHRISTINE MAINVILLE: I think we'll take a break. We can go off record.

-- RECESS TAKEN AT 10:31 A.M. --

-- UPON RESUMING AT 10:47 A.M. --

CHRISTINE MAINVILLE: There were occurrences where debris or some material fell on the train tracks. Do you recall that?

MATTHEW SLADE: You'd have to be more specific.

CHRISTINE MAINVILLE: Sure. Some of it may have been parts of another train or a part of another train that came loose. This would have been in February 2020.

MATTHEW SLADE: Okay.

CHRISTINE MAINVILLE: So you can tell me if that doesn't refresh your memory or you don't have awareness of that. But I wonder how common that is or not, whether that's something that does happen on a train line or not.

MATTHEW SLADE: It does. But, I mean, it's unusual on a train -- on a light rail system, I would say. It's more common, I guess, on a heavy rail, and what have you.

I assume you're referring to some of the speed sensor brackets or the sanding brackets. We got some hardware off some of the trains, which was essentially as a result of the corrugation I talked about earlier and the vibrations and the

wave length of those corrugations, and the vibrations were going into the vehicle.

So I know that Alstom redesigned the brackets for the sanding nozzles. I don't know that they installed the redesigned ones, they replaced them all because they were showing signs of fatigue. And I know that that was -- I don't know what they did with the speed sensor brackets, but we had a few issues with those as well.

I think, generally, now I suspect they're probably -- probably, I would hope, they are now checking things over a bit more thoroughly than they were previously with regards to tightness of bolts. I mean, those were not bolt loosening issues, those were actual metal fatigue issues.

CHRISTINE MAINVILLE: Okay. Does the nature of this bogie, or the design of it, require more accurate torquing of bolts than is typical?

MATTHEW SLADE: I wouldn't say that. Again, it doesn't matter what the component is, whether it's a bogie or anything, right? Everything has an engineered torque to it and they need to be respected.

I think the bogie is a separate issue. But I think one of the things that they've got,

again, is what we call witness marks, which are the little touches of paint on the head of the bolt and then whatever the bolt's going into, so that it's very easy to visually see if it's rotated and loosened at all. I think they've got better at that.

But, no, I mean, like these vehicles, torquing of bolts on -- whether it's a car, a train, an airplane, a building or whatever, right, torque settings are torque settings, and they're calculated and engineered and designed and, you know, that's -- it doesn't mean they don't need checking regularly. No different than the lug nuts on your car, you check them every now and then, right? Or certainly after you've taken them off with winter tires, summer tires, etcetera.

CHRISTINE MAINVILLE: Okay. What are the bogie issues that you --

MATTHEW SLADE: Well, I mean, the bogie has gone through at least two retrofits, I think. And we had an issue during assembly. I mean, it pre-dated me, but some of the vehicles are still undergoing, we had some issues -- again, quality issues on the supply of those bogies, which again were locally sourced from Québec, I think.

So a number of the bogies had poor quality weldings and poor quality castings, so they were replaced. They then -- as a result of one of the first maintenance exercises, it became apparent that the bogies were missing lubrication ports to be able to add grease. So they went through a retrofit program where all the bogies were removed, sent away to have grease nipples added to them.

Obviously, and then we've had the other issues associated with bearings and axles.

CHRISTINE MAINVILLE: Yes.

MATTHEW SLADE: And I think -- sorry, just to finish. I mean, I've never asked the question directly, but, you know, I don't know why this particular bogie was selected for this vehicle, when Alstom has other bogies that might be better suited to this one. So this bogie is called an IPONAM bogie, I-P-O-N-A-M. That's for "North America," the last part; I don't know what the "IPO" stands for.

They also do a bogie called an Ixege, I-X-E-G-E, which they actually advertise for the Citadis vehicle, which is more suitable for tight radius curves and higher-speed running. And I don't know why they didn't install that bogie

because, on paper, and on their own marketing documentation, it sounds like it's a more appropriate bogie to have for our geography on this job.

CHRISTINE MAINVILLE: Could it have to do with the 100 percent low floors --

MATTHEW SLADE: No.

CHRISTINE MAINVILLE: -- do you know if that required a redesign? No?

MATTHEW SLADE: No, it's designed for the Citadis vehicle. It's a bogie that's available for the Citadis program, so if you ordered a Citadis, you could specify that bogie.

CHRISTINE MAINVILLE: Do you know if the Citadis in Europe, though, is a hundred percent low floor?

MATTHEW SLADE: Yeah, they are.

CHRISTINE MAINVILLE: It is?

MATTHEW SLADE: Essentially, like, the height of the floor is consistent on all the Citadis vehicles.

CHRISTINE MAINVILLE: So maybe we can move to the derailments, speaking to the axle and bearing failure.

Let's start with derailment number one

at Tunney's Pasture. Can you speak to that one?

MATTHEW SLADE: Yeah. So, essentially, the vehicle had been taken out of service at Tunney's and then had been parked at Tunney's for several hours during service, which is not an uncommon thing to do, to put a train at one of the terminal stations in one of the empty platforms. You can operate those terminal stations on one platform quite efficiently. So we either normally stage a spare or we put one of the trains that's, you know, had an issue in one of those platforms.

And then, rather than impacting service, we'd park it there until the day quietens down and then we'd take it away back to the yard, when it's less likely to cause an impact to the traveling public. Which is what we'd done with this one. It had been parked in a platform. It came to -- it had been looked at and assessed and said just leave it there until a better time to take it back to the yard.

And then -- so when it derailed, it was empty, it was out of service, obviously, other than the operator and the technician that were on board. And it was departing Tunney's and it was going across a crossover, I believe, to go on to the

other track, and so it was travelling a relatively low speed, and it was at that point that it derailed. And it was in the evening. It might have even been dark by then. It was -- I can't remember what time it was. It was after peak service so it would have been after seven o'clock, I would have thought.

And I guess the easy way to put it is the wheel became detached from the axle, which I would classify as a catastrophic failure of the axle or the -- you know, the interface between the wheel and the axle.

So then we had to -- decision was made, well, you can't obviously move a vehicle when it's derailed and it's got a wheel that's removed. So we had -- we did a fleet-wide check on all the vehicles to see what had caused it. We instigated that. And we arranged for something called a skate to be brought to site to allow us to -- which allows you to move a train with a wheel missing, or what have you. So it was re-railed and then a skate was put under that bogie to assist with getting it back to the yard. Obviously, TSB were involved. And as a result of that, the -- and the result of the ongoing bearing investigation, the

vehicles now undergo a bearing check every seven and a half thousand kilometres.

CHRISTINE MAINVILLE: And is there an understanding now of the root cause of that failure?

MATTHEW SLADE: I'm going to say yes, and no. So, there is a -- I believe there's a draft report in circulation now -- I think it's only been available for about a week -- which is from Alstom, which has some thoughts in it. But I think the report is missing a lot of information that I think is required to be able to determine what the real root cause is. Because I'm not convinced with what the document says at the moment, but that's -- I think it's part of the way there, but I don't think it's got everything in it.

CHRISTINE MAINVILLE: Can you start with what -- a summary of what that document says or points to, in terms of the root cause?

MATTHEW SLADE: It talks about vibration from the track, again, from the corrugation that we talked about. And it talks about the stresses as a result of the geometry, i.e. the tight curves of the track. And then it has some long-term recommendations and some

short-term recommendations, all of which relate to vehicle maintenance or infrastructure maintenance. But I think there's -- you know, it refers to all sorts of studies and things that were done, but none of those are appended to it or included in it and there's not a -- so I don't have access to all the data to be able to understand how they actually got to the conclusion that's in it. And there are some other things that I believe need to be considered that may or may not have been considered, and without all that information, I don't know whether they were.

CHRISTINE MAINVILLE: And what are those other items that you would consider?

MATTHEW SLADE: So there are some other issues with those bogies and those axles. So, again, I can't tell you the date off the top of my head, but it became apparent that the splines on the ends of the axles were wearing prematurely. And the backlash on the splines is pretty excessive on some, or getting to a point where it's on the limit where they need to be replaced.

There was a study done into the wear on the splines that suggested that the axles were bending slightly and were, as a result of the

weight of the vehicle and the weight of the passengers, which suggested -- and there's a recommendation from Alstom to replace the axles. None of that is documented in that report or referenced. Because I kind of -- I wonder if the condition of the splines and the bending of the axles actually has an impact on the forces that are being applied through the bearing, whether they're being applied as the bearing would expect them to be or was designed to receive them or not.

There was originally a plan to start replacing axles on those cars already, and it hasn't started. So there's a lot of questions around that that still need answering before I'm going to accept or, you know, believe that the root cause is what they believe it is. I think there's other factors that need a lot more interrogation.

These axles and the bogies are, they just don't seem to be -- I don't want to say "fit for purpose" but they're not coping well with the environment that they're in, i.e. the curves and the speed and the geometry.

CHRISTINE MAINVILLE: Okay. And just to be clear, is that a quality issue with the axle itself, potentially?

MATTHEW SLADE: Yeah.

CHRISTINE MAINVILLE: And was that sourced locally?

MATTHEW SLADE: So that's an interesting question. So, Texelis, I don't know where they're based. They're an interesting company, Texelis. So, they don't do the bogies, they only do the axles. But they do a variety of different axles for different applications, they're not railway-specific. And they have a railway division, but they provide -- for instance, if you went on their website, you'll see that they provide axles for military vehicles, whether they be tanks or people movers, things that are in war zones. They do a lot of heavy-duty axles, which I think is why the axle that we have is designed the way that it is.

The axle -- it's quite unusual, the axle that we have on the train. It's not what I would have expected to be on the train. It's a bit more industrial. The bearings are unusual; it doesn't have roller bearings, as the -- but anyway, I think -- I don't know where the axles came from. I know they came from Texelis, but whether they were manufactured here, as in North America, or

whether they came from Europe, I'm not entirely sure.

CHRISTINE MAINVILLE: Okay. Do you have a view on whether heat sensors should be in place to detect this kind of issue?

MATTHEW SLADE: I don't think they would make any difference, really. I think -- so, I know at the time, there was a lot of conversation from TSB and the media and other people, including myself. So, I raised the question of something called a hot axle box detector, which is a relatively standard piece of wayside equipment. It's used on heavy haul predominantly, and on heavier trains, commuter trains and what have you, long-distance trains. And it's a device that measures the heat of the axle bearings as they go over them.

I've never ever seen those used on a light rail vehicle.

So, the technology is out there, but as I understand it from talking to the Alstom engineers, is that the temperatures that this bearing saw, those detectors would not have detected this. So you've got to have enough knowledge to know -- I mean, yeah, you can put

detectors on anything, but it's only any good if it's detecting what it needs to detect.

You can, for instance, put colour-changing paint and tape on the axles, for instance. You know, you can get these paints that change colour with temperature. You could do that. But it's not going to tell you anything quick enough, I don't think, or it's not going to be sensitive enough to give you the information.

I think, if you were to actually install sensors into the axles and the bearings, like, the engineering effort -- you would have to redesign the bogie, you would have to redesign the axles, to be able to add all that instrumentation, and then you're adding a load more information and computerization into the vehicle, which is already very, very complex and heavy. I don't -- for what it would cost and what it would tell you, I don't see that it's a viable or sensible option.

I think a different bogie or a different axle and a different bearing configuration would make more sense. Still a huge cost implication and time implication, but I would look at, like I said, those other bogies that Alstom manufacture. I would look at a different

solution -- overall different solution to those bogies before I started -- you know, you could fit instrumentation, and they think it's going to be your saviour and it's going to prevent anything like this happening again. I don't think anything out there exists that could do that.

CHRISTINE MAINVILLE: So, short of what you've described, is there still some risk of this happening again?

MATTHEW SLADE: At the moment, with the measuring bearings every seven and a half thousand kilometres, the risk is mitigated, on a short-term basis. I mean, this is not something you can carry on doing for the next 30 years. So a solution needs to be arrived at.

Now, whether that is different bearings, different axle, different bogie, I don't know. But something -- there needs to be a -- something needs to happen that changes -- I would think, that removes that seven and a half thousand kilometre inspection, because I don't think that's sustainable or sensible.

CHRISTINE MAINVILLE: Or?

MATTHEW SLADE: Sensible.

CHRISTINE MAINVILLE: Sensible, okay.

And then do you want to move to the second derailment?

MATTHEW SLADE: Sure. So, whilst unrelated, it kind of is related. So, we do know that the root cause was lack of torque to the bolts that held the gearbox to the vehicle. But the only reason that gearbox came off is because that axle was replaced as part of the bearing inspection. It had failed a bearing inspection and so it had been dismantled to have a new axle and bearings put in it.

So, if the first derailment hadn't happened, then you wouldn't have ever had to do that, so therefore the second one wouldn't have happened.

I think there was -- in the early stages, there was a lot of -- I don't want to say "panic," "panic" is the wrong word, but there was a lot of interest obviously in what had happened, and there was a lot of early thoughts that were then found to be wrong.

So, going through the reports of what happened, it makes -- it makes more sense to read the later reports rather than the earlier reports because there's some misinformation in some of

them, from -- just from, I guess, the urgency with which people wanted answers. So, for instance, one of the very early reports from TSB said the train had derailed before it arrived in the station. It didn't. It derailed on departure. So there is some information out there that just needs -- has, I guess, some caution around it.

And it was only, you know, during the shutdown and after -- after we, being not the TSB and not the police, got access to the vehicles and the site that we started to put the pieces of the puzzle together that, you know, resulted in understanding what had happened.

You know, I think, obviously, you know, the root cause is the human -- the human error. I don't necessarily -- you know, the person who torqued the bolts up or didn't torque the bolts up, I don't hold that individual responsible. There was a shift change, and paperwork was lacking. But, you know, there's always a supervisor. Someone put that vehicle into service when it probably shouldn't have gone into service, knowing, you know, if they'd done due diligence and all the steps, they'd have known those bolts haven't been torqued up.

And it was clear from -- my opinion, from the evidence physically on the site, there was -- the train had started to drop debris, as you referred to earlier, bolts, when it was travelling in the opposite direction. So it had been dropping parts off of the train for over half an hour, this is half an hour end to end, and some of those parts were found on the adjacent track, which means when the train had been travelling in the other direction.

It's unfortunate that we haven't been able to talk to the operator, the driver at the time, or understand their witness statement or their record of events. As I understand it, at the point of derailment, that they were at the opposite end of the train, so they might not have felt it when it derailed. But when it was on the other track, losing parts, they would have been directly over that, they would have been, you know, nearer it.

So, considering that the drivers are so quick to tell us that they've got a flat spot, or they -- you know, the train doesn't feel right, whatever, it's surprising that nothing was known about it before it got to Tremblay Station.

As you're probably aware, one of our staff was on the train and got off because he was concerned, and he made a phone call.

So, and then the fact the train went so far after it departed Tremblay, I find quite surprising that the operator wasn't aware, and that the train went that far.

CHRISTINE MAINVILLE: Right. And am I right that there were additional quality control measures put in place at Alstom following that?

MATTHEW SLADE: Yeah. I think they've -- you know, it's not the only incident we've had where there's been human error as being the root cause. You can -- you know, I'm not saying you can -- you can never get rid of all of it. There's always a chance that it might occur, with human error.

But, yeah, the checks and balances that are in place now are more stringent than they were before. And I think they are acutely aware of, obviously, the implications.

So things have improved.

CHRISTINE MAINVILLE: Have they improved also -- I understand there's been a merger with Bombardier, and has that had an impact on

Alstom's performance on maintenance?

MATTHEW SLADE: So, I don't know if they would call it a merger. They call -- they bought Bombardier -- [overspeaking]

CHRISTINE MAINVILLE: Yes -- [overspeaking]

MATTHEW SLADE: So, depending on who you talk to, whether they regard it as a merger or a hostile takeover, or whatever, but the advantage of that was helpful for Ottawa, because Bombardier has a large facility at Kingston, which is not too far away, and which gave Alstom access to local resources with expertise in light rail transit. And certainly when we had these significant incidents, they were able to rely on local expertise that they didn't have otherwise. If they hadn't merged with Bombardier, you know, we would have been reliant on communications to and from Paris, and I don't know where they would have brought people from.

You know, we talked in our last session about the labour force in Ottawa and the skill sets, etcetera. So, having access to the Bombardier -- the ex-Bombardier staff out of Kingston has certainly helped with resources and their ability to react. And I think, on the

vehicle side, they have improved and they have got -- as a result, they've got a lot more resources on site than they had before. I think they've always been under-resourced, but they've now got a lot more people at the MSF.

But I would still -- my caution is that they are still heavily vehicle-focused and their infrastructure resources are still lacking.

CHRISTINE MAINVILLE: So, for those aspects of the infrastructure that they are responsible for maintaining?

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: Okay.

MATTHEW SLADE: Track, OCS, signalling, wayside systems, I think they need to increase their resources and increase their skill set.

CHRISTINE MAINVILLE: Would Thales ever be brought in to retrain the trainers, as part of that?

MATTHEW SLADE: If Thales were needed to come back in to do that, it would have to be a variation, because they delivered all of the training that they were required to deliver.

I know that Alstom engaged an ex-Thales employee who was involved in the testing and

commissioning, to help them re-train and understand more about the Thales system, which was a good thing. I helped instigate that.

I knew the individual well, and they were looking for a new role and a new opportunity, and I put them in touch with Alstom and suggested that they rely on this resource, or hire this resource, on a contract basis to help improve their knowledge, understanding and skill set.

So, it's not training, as in certified specific training, because this individual is ex-Thales rather than still at Thales, but it is, I would say, coaching and familiarization and improving their reaction and their response to certain things that's occurred.

But, no, I'm not aware of there being any additional training requested or implemented.

CHRISTINE MAINVILLE: Do you have any additional comments on maintenance failures that we haven't touched on already?

MATTHEW SLADE: Just generally, you mean? Or...

CHRISTINE MAINVILLE: Yes, just generally.

MATTHEW SLADE: I think there's a -- I

think the way -- I think the maintenance, the maintenance of the infrastructure, can be improved dramatically. I don't -- I guess I don't -- personally, I don't like the way it's done. And I guess that's just a reflection of my experience from Europe and the way infrastructure is maintained there, than what is done here. I think there's a lot of room for improvement, I guess. And it's getting the focus that it needs now, but it's still a challenge.

CHRISTINE MAINVILLE: What would you say are the main differences between how the systems are maintained in Europe versus here?

MATTHEW SLADE: I think, in Europe, everything is a lot more hands-on. So, for instance, track inspections, which are generally done daily, you have different intervals, but generally, good, in normal, I would expect, in the -- back home in the UK, I would expect a track maintainer to walk a mile or two of track a day on foot, with some tools and some spares, and just go along and just physically look at what the infrastructure looks like.

And if you do -- I mean, I'll work in kilometres. It's best part of 13 kilometres. If

you do a kilometre a day, then, by the end of 26 days, you've done the whole alignment and then you're back again. And it means that when you're walking along it, you will notice and recognize and see if there's any changes. You would notice corrugation occurring on the head of the rail. You would notice if things were missing, and what have you, and you would write notes and you would, you know, keep a log of how everything is, whereas, at the moment, Alstom inspects track in a vehicle. So they will get into a -- what we call a high rail vehicle, so it's like an F150 with rail wheels on it, and they'll just drive along the alignment.

And I don't feel that you can -- from the cab of an F150 through a windshield at night, in darkness, you can adequately assess the condition of the track. As opposed to walking along it, at walking pace, rather than travelling at 5 or 10 kilometres an hour in the cab of a truck.

But I just think it's things like that, and it's a bit like an OCS inspection, the catenary that's up in the air. Again, I would expect that to be done at eye level, i.e. get up there and look at it and get in a -- what we call a bucket truck,

a high rail bucket truck, and get up close to the equipment, and, as you go along, you give it a clean and keep going.

But, again, it's done from ground level, looking up, in the hours of darkness. It's not done during the day. But it's challenging. They don't make it as easy as it could be. And they don't necessarily do it to a level of detail or rigour that I would expect them to, or I would want them to.

And they'll argue that they're doing it in compliance with the standards, or with regards to the regime that's required, or their maintenance plan. But that's all very well and good, we talked about plans earlier, but if the plans aren't right in the first place, it doesn't help.

So, I just -- I think, especially with everything that's gone on, you know, more vigilance would make more sense. And it doesn't appear to exist with the infrastructure side of things. I think on the vehicle side, they're spending a lot more time, you know -- as we know, every seven and a half thousand kilometres, they're looking underneath them now, which is very frequent. But it's all reactive to events that have occurred.

CHRISTINE MAINVILLE: Have there been resourcing issues, including more recently?

MATTHEW SLADE: At RTM or at Alstom or...?

CHRISTINE MAINVILLE: I was asking about Alstom, but if there's some on RTM's end, please do --

MATTHEW SLADE: Alstom has a fairly high churn of resources, even up to management level. They've brought in some new management, which is good. But they've always had a -- excuse me, a regular churn of staff, both, you know, at manual labour level, all the way up to management level.

I think generally there's often -- there's a lot of vacancies there, regularly advertised. If you went on to Indeed and typed in "Alstom," that's where you'd probably find 30 vacancies on a fairly regular basis. Which I think is reflective of the nature of the workforce, as I've said before, in Ottawa, and are reflective of the pressures of working on that project, which is -- you know, it's a challenge that maybe probably wasn't assessed effectively early enough on.

CHRISTINE MAINVILLE: Do you think the fact of RTM and Alstom not getting paid for some time after operations started, given all the deductions or penalties, do you think that would have had any impact on their performance?

MATTHEW SLADE: I don't know that it's had an impact on their performance. It certainly created a lot of stress and pressure in the businesses. You know, I think you only have to look at Alstom's global revenue; they're a company that can suffer a little bit of pain quite easily. You know, they're bigger than -- their revenue is larger than SNC's and EllisDon's combined. They're a big organization with a big income, so they can suffer that.

I think it's just -- it's stressful for those individuals that have P&L responsibility for the various different businesses, for sure. And it's hard. I mean, we talked about incentivization versus penalization last time. And I think, you know, when you want -- I say "you" -- when the City or the council or whoever wants people to perform better, it's hard for them to do that when they're paid less.

So, I mean, we haven't held back on any

resources, and we haven't held back on any finances, either during the construction or during the maintenance, and I don't think Alstom has either, and it's just an added pressure that's challenging, you know. Some of these companies have shareholders and they have expectations, and it's tough.

But, yeah, I think -- yeah, it's just tough.

CHRISTINE MAINVILLE: We didn't speak about the door failures, or some of the door issues. Do you know what that's linked to ultimately, or were there several causes?

MATTHEW SLADE: Are you talking about the passenger doors, or are you talking about the cab doors?

CHRISTINE MAINVILLE: What's the distinction?

MATTHEW SLADE: Okay. So, the cab door is the internal door that the operator goes through to get into his cab of the train to operate. They had some issues with those at the end of construction and when we went into revenue service.

And then there is the passenger doors, which are the doors the likes of you and I would

use to board and alight the train.

CHRISTINE MAINVILLE: I was thinking of the passenger ones, but were there issues, yes, with both?

MATTHEW SLADE: Yeah. So we had issues with the -- I'll start with the cab doors, because that's what I started talking about.

So, the cab doors, we had an issue with those during production. They were -- they're glass, and they were regularly breaking, shattering, cracking, and so we went through a very late design change. And I think even when we went into service in September of 2019, some of those trains had temporary Lexan plastic doors, cab doors in them, until such time as the redesigned doors were available to be installed.

So we had an issue with those, which was on -- I think it was on the deficiency list. I can't remember if it was on the term sheet or not, but certainly it was on the deficiency list, and it was a retrofit item.

Then, on the passenger doors, we had a few issues during testing and commissioning with them, which predominantly related to what we call the EDR, the emergency door release, which is the

red handle on the inside that a passenger would pull in case of an emergency.

So, we had an issue with those where they weren't -- they were either hard to operate or they weren't consistent across the fleet, or even across the train, or even across one handle. If you pulled it three times in a row, it didn't necessarily perform the same way each time. So those went through a retrofit, on the handles and on the mechanisms that are inside those doors.

And then when we got into service, we had a number of issues that were door-related, that ended up -- caused quite a lot of upset in the community, I guess, because passengers were being blamed for either holding doors open, or forcing doors open, and the doors weren't ever designed for that kind of, I don't want to use the word "abuse," that kind of use.

So we ended up with a variation from the City to modify the doors, which was predominantly software-related. It's called H-bridge. I don't know what the "H" stands for. But there was a modification done to make the doors less susceptible to failure as a result of passenger intervention.

We had some other items on the doors on the minor deficiency list with regards to the sensitive edges. I think all of those have been resolved now. And we had the variation from the City, and the H-bridge has been fixed, and I don't think there's been many issues since.

There was a bit of education required at the beginning, of familiarity with regards to being able to what we call isolate doors, i.e., a door that might say that it's not working properly, the operator can leave his cab, go to that door, isolate it such that the train control system no longer sees that as a fault and still allows the train to move.

But some of that was familiarization and, you know, their ability to respond to those, like I said before, the learning curve. They're all pretty quick to deal with that sort of issue now. It's pretty rare that you have to send a technician out to a door.

We still get door faults. You always will. It's the one item on any fleet, globally around the world, that has the most failures, always. Doors are always a very -- just from the number of cycles that they go through and the

passenger interface, etcetera, there, it's a hard thing to not fail.

CHRISTINE MAINVILLE: Okay. And I take it this software -- this software change and the improvements that were made, these are all Alstom components, correct?

MATTHEW SLADE: Yes, it is.

CHRISTINE MAINVILLE: Were there some delays in getting a proper change control board in place with RTM?

MATTHEW SLADE: Don't know, because I can't remember when it started.

CHRISTINE MAINVILLE: Okay.

MATTHEW SLADE: I would say probably -- maybe yes, okay? I can't remember when it started, so I can't say emphatically. I think -- obviously, a control board is a sensible thing to have, and I think -- I don't know that everybody recognized the need for it or the importance of it at the time.

I think it was also important because of the status of the Stage 2 fleet, which is still being assembled, because there's changes that are coming and going with regards to these vehicles. Which there shouldn't be, but there is. And so, with the changes that are due to come, not just on

the vehicle but there will be software updates from Thales when Stage 2 gets integrated as well. It's important to have that board in place; whether it was early or late, I don't know.

I think the delays on the construction side of the project probably impacted all of that, because it has an impact on the Stage 2 fleet, still which is late, and an impact on the ongoing Thales work in the yard as well.

So I think there's all of those things that are late, which is probably what also impacted it, if the Change Control Board was late, is probably as a result. It might not have been needed initially, but when people realized we still had work to do on the Stage 2 works, it became apparent that it was a sensible thing to have.

CHRISTINE MAINVILLE: What are the implications, from your perspective, of the yard not being automated yet?

MATTHEW SLADE: There aren't any. Sorry, it wasn't supposed to be automated yet.

CHRISTINE MAINVILLE: Well, I understand that it's not automated because of the Stage 2 vehicles being part of the mix and being manufactured.

MATTHEW SLADE: I don't know what you do or don't know about the automation of the yard.

So, the automation of the yard was not a City requirement, okay? That was an RTM/OLRT-C/RTG decision. And during construction, when we were struggling with schedule, OLRT-C and Thales agreed to put the yard automation on hold in order to get focused on getting the main line signalling and train control system done for Stage 1.

So that was put on hold, and the agreement was that we would restart the implementation of the automation in the yard once Stage 1 had gone into service. So, it was never -- you know, everyone always knew it wasn't going to be done Stage 1.

And it was a -- it was an internal decision to automate the yard, it wasn't the City's decision.

CHRISTINE MAINVILLE: Okay.

MATTHEW SLADE: The fact that it still isn't done doesn't have any impact on service. All it impacts is a commercial agreement between OLRT-C and RTM.

CHRISTINE MAINVILLE: Okay.

MATTHEW SLADE: That's the only thing it impacts.

CHRISTINE MAINVILLE: So it doesn't make it more difficult to get the trains available -- to get the trains ready or out? No?

MATTHEW SLADE: No. So, people will tell you that it probably is, and I don't agree, because (a) it was never originally part of the contract to do it, so they would always have had to have operated the yard the way we're operating it now.

Secondly, it's not -- I'll admit that it's not helpful having Stage 2 trains sit around the yard at the moment, but then if all the Stage 2 fleet was delivered when it was supposed to be delivered, all of them would have been there by now, and they're not, they're late, so there are actually less trains there than there would be.

So, you know, it doesn't have any real impact other than the fact that now we are having to test and commission the yard whilst we're also operating a railway. But that decision was made a long, long time ago, when we decided to put it on hold whilst we were concentrating on getting Stage 1 alignment up and running.

So the fact that, yeah, okay, there's frustration in being able to give Thales access to the yard to do the testing, and there's frustration from Alstom saying, "While they're testing, we can't move trains around the yard." There's a bit of, you know, management and negotiation and, you know, movement to plan around that, but the only issue is a commercial issue. There is no issue for delivering service.

CHRISTINE MAINVILLE: Do you have any understanding of the causes of the delays to the Stage 2 vehicles?

MATTHEW SLADE: Well, they're late because Stage 1 was late.

CHRISTINE MAINVILLE: That's what I just wanted to clarify.

MATTHEW SLADE: Stage 1 was late, obviously, and then Alstom -- so the original contract with Alstom had a date by which they were asked to vacate the MSF from production perspective.

That was supposed to tie in with them running service. And if they had asked for an extension to that date, they would have been -- you know, we would have let them carry on, you know,

doing certain activities at the MSF, but they decided -- they bought or leased Brampton, and they decided they wanted to relocate to Brampton.

And they had good reason for wanting to do that, but that then added delay to the production. And, actually, they've actually, I think, currently -- I think they've actually stopped production for 12 months now because they're busy building -- they were so late with the Stage 2 fleet for Ottawa, they've started building fleet for Hurontario and Finch. So, rather than being late on several contracts, they just said, "Well, we're already late on Ottawa. We'll just be even more late and stop production for a year while we build other fleets."

So, they are a long way behind, and we have some unfinished Stage 2 trains at the yard in Ottawa, and we have -- now we're in a situation where they've stopped assembly for the time being.

CHRISTINE MAINVILLE: Is there still some retrofitting or other assembly-type work being done at the MSF?

MATTHEW SLADE: Well, you've got these incomplete Stage 2 cars that need to be finished. You've got a number of cars that have had --

they've ended up being donor vehicles, for want of a better term, where they've been -- if the Stage 1 fleet have had issues and they've needed parts, they robbed them off of the vehicles that haven't been yet commissioned or sold to the City. So, there's -- I guess it looks a bit like a graveyard, a boneyard of trains that have had various bits taken off them.

So there are, I don't know how many; I'd have to ask Sharon how many vehicles were there specifically that were in the state of incompleteness, but there's a number of trains there at the MSF that are, I guess, taking up prime real estate, that are unusable.

CHRISTINE MAINVILLE: Is that impacting maintenance, in terms of the space at the MSF or other --

MATTHEW SLADE: They're in the storage shed, so you could argue they're not taking up any space or not affecting maintenance, but those vehicles are going to have to be moved to the point in time to facilitate the Thales testing. So they're -- you know, just moving, I use the term, "dead trains," moving immobile trains around

requires a little shunting vehicle, takes a lot of time, a lot of energy, a lot of resources. It will be easier if the vehicles weren't there, but it costs a lot of money to take them away and bring them back again, but it is what it is.

CHRISTINE MAINVILLE: In terms of the manufacturing and assembly that went on at the MSF, is that something you're aware of having been done much elsewhere, in terms of building or having a -- well, not -- let me rephrase. Not using an already-existing, proven sort of production line?

MATTHEW SLADE: I'm not aware of any vehicles being assembled in a maintenance facility before. They sometimes will go through a mid-life overhaul. Like, if you go to countries that have large fleets that have high mileage on them, they might do an overhaul at a maintenance facility. But not built from scratch. I've never seen that done anywhere. I'm not aware of it ever having been done before. It might have been, but I'm not aware. Normally, they're done in assembly facilities.

CHRISTINE MAINVILLE: Right. Are you able to speak to who, if anyone, assessed OC Transpo's readiness for service?

MATTHEW SLADE: I don't -- I don't know for certain, but I don't think anybody did. I think -- so, the independent safety assessor, who was an individual, or he's an individual, Sergio Mammoliti, at the time worked for the TUV. He was responsible for assessing the system as being safe for passenger service.

I think if you asked him directly did he assess people as to whether or not they were ready, I think he would probably say, no, but it -- that wasn't part of his role. His role was -- as safety assessor was to say it was safe for passenger service.

I think he was the only person, the only individual, that looked at all of the organizations, whether it was OLRT-C, RTM, or OC Transpo. I'm not aware of anyone else doing anything independently to assess -- I mean, I guess the City might have had -- you know, they had consultants like STV, they had consultants on board who would be giving opinion, but I don't know that they hired in anyone specifically to assess their readiness.

CHRISTINE MAINVILLE: Okay. And just one question I had to clarify on the trial running,

the morning and afternoon meetings.

MATTHEW SLADE: Yeah.

CHRISTINE MAINVILLE: I just wanted to clarify, if you recall, which team assessed the maintenance performance, in terms of -- I understand that aspect of the trial running to involve some level of, you know, quality, judgment or, you know, assessment of how significant any given issue is or not.

Was that part of the morning meetings, the morning team meeting's role, or would that be the afternoon meeting?

MATTHEW SLADE: The morning team reviewed all of the data that was -- because there's volumes of data that's produced by the vehicles and the maintenance teams and everything. Volumes of data that gets produced, is there -- is measured or looked at to see whether or not the maintenance practices were meeting the requirements of the trial running plan or the contract PA.

So they would crunch all that data, and they would provide all of that data and substantiation to the afternoon meeting, with a recommendation as to whether they thought it was a pass or a fail.

But then the afternoon meeting would assess what they had presented, would assess the material, they would look at specific items, and would then either -- I guess, 90 percent of the time, maybe higher, they would agree with whatever was recommended from the morning meeting, but sometimes there might be a conversation that might -- it might have changed the score; whether it changed it from a pass or fail, I don't know, but it might have changed the percentage, maybe, which would have been based on, again, information that would have come from that morning meeting. Or maybe they might have said, "Look, we've said it's a fail but you need" -- you know, if they wanted the executive level to make the overall decision, they might have presented something that says, "We've classified it as a fail, but these are the things that occurred, it's up to the executives to decide if it's still a fail or if it's a pass or vice versa."

CHRISTINE MAINVILLE: Are you referencing just now the maintenance in particular, or any of the categories?

MATTHEW SLADE: No, the maintenance in particular. That's what you asked for, right?

CHRISTINE MAINVILLE: Yes. No, I just want to make sure that's what you were still talking about.

MATTHEW SLADE: No, no. Yeah.

CHRISTINE MAINVILLE: Okay. So the afternoon meeting team would get some description or account of the types of events that occurred and what was happening on the ground to then assess?

MATTHEW SLADE: Yeah, but it was a substantial packet of documentation. There would be an e-mail, and attached to it would be, I don't know, six or more documents that included all the data, whether it was PDFs or Excel files, that had everything that basically built up to the decision or the recommendation that they had put forward.

So that was published on a daily basis between the morning meeting and the afternoon meeting, such that it was available for review and comment.

CHRISTINE MAINVILLE: And were there other categories where the morning meeting would provide a recommendation?

MATTHEW SLADE: Yeah. It wasn't just the maintenance practices. I mean, they pulled together all of the information that was fed up to

the panel.

CHRISTINE MAINVILLE: Okay. So they would also crunch the data and provide a recommendation, even, for instance, on the operational category, the travel time and the headway?

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: And do you recall any changes to those recommendations, whether it was pass/fail ultimately?

MATTHEW SLADE: I mean, I can't remember any of them categorically, but I'm sure, if I really spent the time and effort to go through all the morning documents and then the afternoon documents, I'd be able to see whether or not any decisions that moved one way or the other.

CHRISTINE MAINVILLE: Okay.

MATTHEW SLADE: I mean, the information is all there. It would just take a very long time to go through it. I can't remember specifically any going one way or the other, from a fail to a pass or a pass to a fail, as a result of a discussion that was held in the afternoon meeting.

I think -- like I said, I think, in my

previous session with you, I don't think we ever had any long, drawn-out, contentious discussions about, you know, whether it was a pass or whether it was a fail on any individual category or on the overall day. They were generally unanimous decisions. Those meetings were generally very, very quick, 20 minutes, 30 minutes, and they were not contentious in any way whatsoever.

CHRISTINE MAINVILLE: And would the morning team meetings ever give an overall recommendation about whether the day was a pass?

MATTHEW SLADE: No.

CHRISTINE MAINVILLE: Okay.

MATTHEW SLADE: No, and everyone was kept separate for very good reasons, for that reason specifically so, you know, very few people knew what the scoring criteria was, very few people knew what the actual -- no one saw the scorecards other than the people on the panel.

At the time, the City had a problem with an individual in their organization who was leaking information to the media, so everything was buttoned down as tight as it could be. You know, I had -- even my CEO was asking for copies of documents, and there's e-mails from him -- from me

to him, saying he can't have them, but I would tell him if it was a pass or a fail on the date, but I wouldn't give him any more details than that, just so that he had knowledge for the Board, as much as anything, as to where we were trending on the whole trial running. But the information that was in that room stayed in that room.

CHRISTINE MAINVILLE: And what's the reason for that?

MATTHEW SLADE: Because of the problem with the media. People were leaking information out, like documents, e-mails. There was people in the media, and in the public, who had information. They were getting information from somewhere within the City's organization, and it was agreed amongst all parties that they didn't want the media or the public tracking whether or not we were trending for a pass or a fail or whatever, or trying to second-guess what was going on.

So, I guess it was combined discussion amongst RTG and the City, was that all of this would be kept as -- "secretive" is the wrong word, but it, you know, was in a very close-knit group as possible, because it was so political.

CHRISTINE MAINVILLE: Okay. You

indicated last time, I believe, that Steve Nadon was on the morning trial running.

MATTHEW SLADE: Yes.

CHRISTINE MAINVILLE: Are you sure about that?

MATTHEW SLADE: I thought he was.

CHRISTINE MAINVILLE: Okay.

MATTHEW SLADE: Or he might -- no, I thought he was. Because what we had was we had an issue -- I know, you know, we've talked about work orders and things like that in the maintenance system. We had a situation where we had a minor deficiency list from substantial completion that was agreed with the independent certifier, that had a load of deficiencies that we knew we had to correct over a period of time, okay? So they were known issues.

And then we had individuals, during trial running, raising work orders for those things that were known as deficiencies and were saying, "You're failing your maintenance practices because you haven't gone and fixed that." But it wasn't down to RTM to go and fix it because it was a deficiency on OLRT-C and they had a year or whatever to go and fix it. So there was a period

when -- I guess at the beginning of trial running, when the scoring from the morning or the discussions from the scoring in the morning meeting was the, "Oh, you're failing because all these work orders have been raised," and we're like, "You can't raise work orders against a known deficiency that you know is not going to be closed for another 12 months."

So there was -- the person that knew more about the minor deficiencies list than anybody, with time, was Steve Nadon. So I think he got sucked into that morning meeting. He might not have been originally one of the attendees, but when it was clear that the -- that some of those minor deficiencies were being classified as maintenance issues, then Steve was either asked to attend or, I don't know, told to attend, because he could sit there, and when they said, "Oh, CCTV camera X, Y, Z has got an issue," and he'd say, "Well, that's not a maintenance issue, because it's line item 1198 on this Excel spreadsheet as a deficiency."

So he might not have been on the original invite list, but he certainly participated as a -- from a purpose of making sure that they were not artificially scoring it incorrectly.

So he was involved. Whether he was on the original invite list for those morning meetings, I can't remember without pulling out the calendar invite and having a look.

CHRISTINE MAINVILLE: Do you know who from OLRT-C would have been there in addition to him?

MATTHEW SLADE: No, not off the top of my head.

CHRISTINE MAINVILLE: Okay. Fair enough. Anything else that we haven't discussed in the last two interviews -- or this interview and the last one, that you'd like to address?

MATTHEW SLADE: That's a hard one. I can't remember everything we've discussed.

I think -- I don't know, really. I think, other than me just giving a general opinion on bits and pieces, you know, I think I've answered all the questions that you've asked. I don't think I'd change anything, but...

CHRISTINE MAINVILLE: In terms of a general opinion, what would you point to as, you know, root causes, in terms of perhaps external factors or contributing factors to what may have led to the fact that this project encountered the

issues it did?

MATTHEW SLADE: Well, I think -- okay. So, part of it is just -- I don't know how to put this -- the unusual quirkiness of Ottawa as a city that it is, with its political pressures. I've never -- and I'm working in other cities at the moment doing similar projects, and they don't have the level of political pressure that Ottawa has.

Now, whether that was down to individuals, or down to the City, I don't know. But it's a -- it played a significant part in how stuff was done, the relationships between all of the parties. So, I think that has had an impact, and it puts undue pressure -- still constantly today, it still puts undue pressure on the project and on the people. And I don't know that that could ever be stopped. It's hard to undo that once it's done.

A lot of it is from behaviours which are learned from individuals, and they're a reflection from leadership down.

Part of it is -- I know we've talked about it, and I know you've talked to other people about it, probably more than me, and they're better suited to answer. Part of it is down to the nature

of the P3. I think, you know, this is an exceedingly complex project. Even by transit standards, this was a complex project. If I compare it to my other ones, it is probably the most complex one.

And projects of this nature, I guess, were successful if everyone acts with the same good partnership intentions, for the good of the project, irrespective of what it says in the contract. But I know from -- again, you know, I relate back to my previous careers in Europe. And, you know, the P3 model is not used for transit, certainly in the UK anymore. There's -- I'm sure you've read, there's been some horrific cases of P3 failures on transit jobs there. And it's not a form of contract that's used for transit. It's still used successfully in healthcare and other social projects, but it just -- for whatever reason, it doesn't seem to be the right method of delivery for transit jobs.

I think part of it -- you know, we bid the job on a price. Whether that price and the affordability budget in the first place was right or not is something that is -- I guess could be looked at. I mean, transit jobs here are more

expensive generally than other places in the world, but I think that's a reflection of the maturity of the industry as a whole.

And I think it was just, you know, an amalgamation of all those things. It just tends to compound, right? And, I guess, if you look at it from the outside in and you read all the media and everything, it looks like it's been horrendous, but I don't think it has been. We had a long period, almost 12 months, of 98 percent plus on the system. And I think, even when there is an issue, I know it will affect the individuals whose journey it was at that point in time and they're the ones that suffer, but, generally, I think, for a new system, it hasn't performed that badly. But I think everybody was expecting it to be absolutely perfect, which is all down to how the City managed the media from day one. And I think managing expectations has been the biggest challenge in this, and I think it still is a challenge going forwards. You can see that if you look at any of the transit commissions that are ongoing. I think that's the thing that we'll -- you know, this will all, you know, cease to be an issue in the future.

Are we going to change anything? No,

people have learned a great deal. You know, it's a learning curve at the front of a job. I don't think the job was designed badly, built badly or is being maintained badly. I think it's just -- it's new to everyone, and people need to understand that when you do something new for the first time, it's tough.

CHRISTINE MAINVILLE: And aside from the procurement and contract model, are there areas of improvement -- recommendations that you might think of to address some of the issues you've highlighted? Some are difficult, like the relationship and the --

MATTHEW SLADE: There are some easy ones, and I think, looking at some of my other project agreements on some of my other jobs, some of those things appear to be -- "fixed" is the wrong term. It's different from province to province, I guess. But there are some things that were -- that are in the Project Agreement that I just -- you know, sometimes you look at it and just go, "Why is that in there?" And some of those things still hurt us now. And they're not necessarily related to the performance of the vehicle or the performance or the design of the

infrastructure.

I mean, and I don't know whether this has come up with anyone else yet or whether it -- but one of the things I struggle with now operating at board level in these organizations, so there is a -- obviously, we have Mario Guerra in at the moment who's seconded in, right, from his VP role within SNC and he was a board member before, but he's an interim general manager, essentially. And we haven't had a general manager since Claude Jacob left. And I don't know if you know why that is, but we've been looking, recruiting, head-hunting globally, throughout our three businesses, to look for candidates for the general manager, and we've made a number of job offers to individuals, but the City has the overall decision as to who RTM hires as the general manager. And, like, I don't know how they can have that with their level of experience that they have, or how they can determine how we want to run our business or who we think is the right person to run our business.

And they've had -- it's not just that role. Even when I became project director, I'd been there as the systems director for a year and a half; I had to interview with four people at the

City before I was accepted as the project director, even though all the people that interviewed me had known me for a year and a half.

And I think, you know, we're -- you know, don't get me wrong, Mario is doing a great job, and I'm pleased he's there and doing it, but we've made job offers to people, and we've hired people who the City have then turned around and said, "We don't like that person," only based on a piece of paper. They've never interviewed someone. They've looked at their CV and said, "No." And we've hired that person. In fact, we redeployed that person into another project at vast expense. We moved them internationally, you know.

And it's just an example of other stuff and behaviours that make the relationship a challenge. Things that are in the PA, you know, even to change that, we'd have to get a formal contractual change with the City, which is -- even that is a hard thing to do.

I just think we're still -- if we want things to get better, then things like that have to be easier to change, and people need to recognize that we're making these recommendations or decisions for the good of the project, not because

we want to do anything underhand or untoward or unhelpful to either the City or Ottawa, the general public and the ridership.

We're in this for 30 years. It's not that we're doing things intentionally to hurt people or -- you know. And that just doesn't seem to -- I don't know why, it doesn't seem to flow through the contract to the City and everything else. I think it's -- there are challenges like that that I think need to be broken down and changed.

And I think revisiting some of the PA, even now, would be beneficial to all parties, based on where we are with this inquiry and everything else. The outcome should be -- I'd like to see, you know, a grown-up decision that says, maybe this isn't the right -- not necessarily change pricing or anything like that, but just how the form of contract works and how we engage one another, and how we, you know, do the best for the City, because it's not conducive at the moment.

CHRISTINE MAINVILLE: At the moment, yeah.

Just before we wrap up, any other easy ones that you -- as you've said, easy or

identifiable areas of the contract that jump out to you that --

MATTHEW SLADE: Well, I mean, I know, you know, others talk about it far more eloquently than I do, about the penalty regime and how it's being applied, compared to how it's being applied in other agencies and what have you.

I think it's all part of the whole thing. And I think, you know, we have -- we, now with my EllisDon hat on, you know, we're working in three different projects that are like this, P3 LRTs, joint ventures. We have a lot of experience on these now. As do our partners, you know. And I think, as an industry, we kind of need to -- something I've been trying to do, outside of my day job, is trying to get into creating an industry organization that can help provinces and businesses talk and understand what the best thing is for their, you know, cities, municipalities, moving forward.

So I talk to a lot of other agencies, I talk to -- even ones that were not involved in our relationships, Waterloo and what have you, and I think there's a big part to play that is a long-term thing for transit in Canada. It's not

just Ottawa.

CHRISTINE MAINVILLE: Thanks very much, unless you have anything else you wanted to add.

Let me check with my colleague and your counsel, if there's any follow-up questions.

EMILY YOUNG: Nothing from me, thanks.

MANNU CHOWDHURY: No questions from me either.

CHRISTINE MAINVILLE: Thank you. So we can go off record.

-- Concluded at 11:54 a.m.

REPORTER'S CERTIFICATE

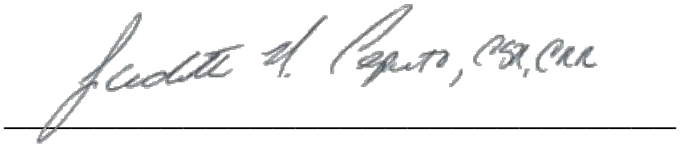
I, JUDITH M. CAPUTO, RPR, CSR, CRR, Certified Shorthand Reporter, certify;

That the foregoing proceedings were taken before me at the time and place therein set forth; at which time the interviewee was put under oath by me;

That the statements of the presenters and all comments made at the time of the meeting were recorded stenographically by me and transcribed at my direction;

That the foregoing is a Certified Transcript of my shorthand notes so taken.

Dated this 25th day of May, 2022.



NEESONS, A VERITEXT COMPANY

PER: JUDITH M. CAPUTO, RPR, CSR, CRR

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