Ottawa Light Rail Commission

Jacques Bergeron
on Wednesday, April 27, 2022

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OTTAWA LIGHT RAIL COMMISSION

OLRTC - JACQUES BERGERON

APRIL 27, 2022

--- Held via Zoom Videoconferencing, with all participants attending remotely, on the 27th day of April, 2022, 9:00 a.m. to 12:01 p.m.

COMMISSION COUNSEL:

Fraser Harland, Commission Counsel Member
Anthony Imbesi, Commission Counsel Member

PARTICIPANTS:

Jacques Bergeron - OLRTC
Jean-Claude Killey, Esq. & Mannu Chowdhury, Esq.,
Paliare Roland Rosenberg Rothstein LLP - Counsel
for Jacques Bergeron

ALSO PRESENT:

Carissa Stabbler, Stenographer/Transcriptionist
Ben Bilgen, Virtual Technician

I N D E X

WITNESS: JACQUES BERGERON

INDEX OF EXHIBITS

-- Upon commencing at 9:03 a.m. --

FRASER HARLAND: Good morning, everyone. As I said, my name is Fraser Harland, and I'm joined by Anthony Imbesi, both Commission Counsel. I'm going to explain how this interview will work to start, and then we'll proceed into a number of questions for Mr. Bergeron.

Before we do that actually, Madam Reporter, if we could have you affirm the witness just to start, that would be great. Thank you.

JACQUES BERGERON: AFFIRMED.

FRASER HARLAND: Thank you, Mr. Bergeron. So the purpose of today's interview is to obtain your evidence under oath or solemn declaration for use at the Commission's public hearings.

This will be a collaborative interview such that my co-counsel, Mr. Imbesi, may intervene to ask certain questions. If time permits, your counsel may also ask follow-up questions at the end of this interview.

This interview is being transcribed, and the Commission intends to enter this transcript into evidence at the Commission's public hearings, either at the hearings or by way of procedural

order before the hearings commence.

The transcript will be posted to the Commission's public website, along with any corrections made to it after it is entered into evidence. The transcript, along with any corrections later made to it, will be shared with the Commission's participants and their counsel on a confidential basis before being entered into evidence.

You'll be given the opportunity to review your transcript and correct any typos or other errors before the transcript is shared with the participants or entered into evidence. Any non-typographical corrections made will be appended to the transcript.

And pursuant to Section 33(6) of the Public Inquiries Act, 2009, a witness at an inquiry shall be deemed to have objected to answer any question asked him or her upon the ground that his or her answer may tend to incriminate the witness or may tend to establish his or her liability to civil proceedings at the instance of the Crown or of any person, and no answer given by a witness at an inquiry shall be used or be receivable in evidence against him or her in any trial or other

proceedings against him or her thereafter taking place, other than a prosecution for perjury in giving such evidence.

And as required by Section 33(7) of that act, you are hereby advised that you have the right to object to answer any question under Section 5 of the Canada Evidence Act.

So with that, we'll proceed into some questions for you, Mr. Bergeron. And if at any point you don't understand a question, please just let know, and I'm happy to rephrase or to repeat.

And if at any point you need a break, also just please let me know, and we can do that. I expect we'll take a break in any event part way through the interview.

So to start, I just want to -- I'll ask my colleague, Mr. Imbesi, to bring up the CV that we received from your counsel.

So, Mr. Bergeron, do you recognize this CV?

JACQUES BERGERON: Yes, I do.

FRASER HARLAND: And are the contents of the CV accurate? We can scroll through it briefly for you if you need.

JACQUES BERGERON: Hold on. Can you --

yes, okay, can you go back up a little bit? Stop there. Yes. Okay, yes, I received -- I acknowledge this is my CV.

FRASER HARLAND: Perfect. So, Madam Reporter, if we can mark this document as Exhibit 1, and we will send you a copy of the document after the interview.

EXHIBIT NO. 1: CV of Jacques Bergeron.

FRASER HARLAND: I see from your CV, Mr. Bergeron, that you are trained as a mechanical engineer?

JACQUES BERGERON: I am.

FRASER HARLAND: And it looks like you spent the majority of your career with Bombardier; is that right?

JACQUES BERGERON: That's correct.

FRASER HARLAND: Can you speak to some of your experience in managing rail projects in particular?

JACQUES BERGERON: Yes. I started in Bombardier in 1982 as a mechanical engineer and participated in numerous projects in numerous different capacity starting from engineering to -- manufacturing, engineering to program management, quality insurance [sic].

I did, if my memory serves me right, about 18 different projects for authorities around the world, more specifically automated transport system in -- twice in Vancouver, once in Malaysia, once in China, once in JFK, New York, and the most recent one is obviously Ottawa as far as the fully automated system.

FRASER HARLAND: Were those previous automated systems rail systems as well, or were they other --

JACQUES BERGERON: Yes. No, they were rail systems.

FRASER HARLAND: And I see that the most recent professional experience listed on your CV is the director of integration for the Ottawa LRT project; is that right?

JACQUES BERGERON: That's correct.

FRASER HARLAND: Did you have prior integration experience prior to this experience with the LRT?

JACQUES BERGERON: (Technical issue) with the vehicles and signalling system --

THE REPORTER: Sorry, the witness was frozen, Mr. Harland.

FRASER HARLAND: Yeah, he was frozen

for me too. Apologies, Mr. Bergeron, but maybe if I could just ask the question again, is if you had prior integration experience. If you could give that answer again, please.

JACQUES BERGERON: Yes, I had previous, you know, experience in integration in basically all the automated system. Mostly the first one was in Ottawa and -- not Ottawa, but Vancouver if my memory serves me right in 1997, I think, and then there on, I almost exclusively worked in automated system.

FRASER HARLAND: Okay. And was -- the project in Vancouver, was that the SkyTrain system, or that's a different project out there?

JACQUES BERGERON: Yes, it's two phases of SkyTrain system. There was a repurchase of vehicles with a new or updated signalling system, and there's the -- there was the Millennium Line in 2002, I think, in Vancouver, which was an extension with -- infrastructure extension to -- I don't remember exactly the scope geographically-wise, but, yes, it was Vancouver.

FRASER HARLAND: Okay. And returning to the LRT project in Ottawa, your CV says 2014 to 2018. Do you recall specifically in 2014 when you

would have started with the project?

JACQUES BERGERON: Yeah, it was late January, early February of 2014.

FRASER HARLAND: Okay. And then in 2018, do you recall when you would have left the project?

JACQUES BERGERON: Yes, at the end of August 2018.

FRASER HARLAND: Okay. Anthony, I think we can stop the share screen on the CV. Thank you.

So, Mr. Bergeron, could you explain to me just generally what your roles and responsibilities were as director of integration on Stage 1 of the Ottawa LRT project?

JACQUES BERGERON: My role was mostly the integration between Alstom and Thales, meaning the vehicle and the signalling system. Of course it kind of trickled down to other systems because they do interface with the operation of the vehicle such as the power, such as the intrusion systems, the CCTV camera system, so -- but the main part of my integration job was between Alstom and Thales.

FRASER HARLAND: Okay. Alstom and Thales, and that means the LRVs and the signalling

system; is that right?

JACQUES BERGERON: You're right. That's correct.

FRASER HARLAND: So can you tell me when -- when were you approached by OLRTC to step into this role?

JACQUES BERGERON: That was in November 2013, if my memory serves me right. I had an ex-colleague that was on OLRT group, and they wanted to have somebody that had worked in that -- in that capacity prior, and they didn't have anybody on their team right now, at that moment.

FRASER HARLAND: Okay. So I take it you weren't able to join immediately in November, but you came by the end of January; right?

JACQUES BERGERON: Yeah, that's right. I was -- I was the vice president of engineering for Nova Bus at the time, and by the time that I, you know, kind of made my decision and finally leave the Volvo group, it took about a couple of months.

FRASER HARLAND: Okay. And so when you arrived at OLRTC, the project had been ongoing for some time already; is that right?

JACQUES BERGERON: That's correct.

FRASER HARLAND: Do you know, is about -- the contracts were signed in March of 2013, so we're looking at at least nine months; is that fair to say?

JACQUES BERGERON: That's fair to say.

FRASER HARLAND: Was there someone, to your knowledge, in a similar integration role before you came onto the project?

JACQUES BERGERON: I don't believe so.

FRASER HARLAND: Okay. So when you arrived at OLRTC, can you tell us a bit about what the status of things were, and what direction were you given by OLRTC about what the issues were and what needed to be done?

JACQUES BERGERON: Well, the -- when I arrived, you know, I was basically informed that we had, well, you know, Alstom as a train manufacturer and Thales as a signalling system supplier and that the information between them has already started to be shared, and but, you know, the real integration work hasn't started yet.

So there was, to my knowledge, not too many problems. One was physical, which was the VOBC, which is the vehicle onboard computer, that was still looking for a physical space to be

installed in the vehicle. And that was very -- basically the very first task of integration that I tackled.

FRASER HARLAND: And just to understand -- I mean, what did OLRTC say that your sort of job was? Like, you would be finished doing what you needed to do when the systems were fully interfaced? Is that what you were being asked to do?

JACQUES BERGERON: Yes, basically that was it.

FRASER HARLAND: Okay. How did integration beyond the Thales-Alstom interface work? Was there someone more generally responsible for the sort of entire systems integration at OLRTC?

JACQUES BERGERON: Yes, the group at -- you know, OLRT was formed by basically three companies, which was SNC, Dragados, and EllisDon. And the system, I'm going to say, procurement negotiations and spec was done by the vehicle engineering group from SNC-Lavalin based in Vancouver.

FRASER HARLAND: So SNC was responsible for the overall systems integration?

JACQUES BERGERON: Basically, yes.

FRASER HARLAND: Okay. And was there someone within SNC that you were coordinating with or sharing information with regarding the progress of the Thales-Alstom interface?

JACQUES BERGERON: Well, we were basically two directors in engineering in OLRT, Roger Schmidt, which was basically a -- I don't remember exactly if he was paid by Dragados or EllisDon. I think it was mostly Dragados.

But we shared all the information and advancement and scheduling on the infrastructure side with Mr. Schmidt and on the systems side with basically myself and a few other engineers that were working with me in Ottawa.

FRASER HARLAND: Okay. Thanks. So would you say when you arrived that OLRTC was already having challenges with integration? Were you being brought in to solve a problem essentially?

JACQUES BERGERON: I wouldn't call it challenges. I would call that the normal state of business to develop, you know, the interface and the systems to work in harmony within the entire system. I'm not going to say it was something

unusual about the state of the project at the time.

FRASER HARLAND: So did you feel like sufficient thought had been given to interfacing between Alstom and Thales from the beginning of the project?

JACQUES BERGERON: Yes, I would assume -- yes, it was fairly well coordinated at the time.

FRASER HARLAND: So you didn't feel like you were playing catch-up at all or that --

JACQUES BERGERON: No, not at all. Not at all, not at that stage anyway.

FRASER HARLAND: Was there a later stage that it did start to feel that way?

JACQUES BERGERON: Not really. You know, those projects are quite complex, and it's -- you know, it's normal to start with a few -- well, quite a lot of unknowns as far as interface between, you know, the 19 systems that form a system of that capacity.

So there's quite a lot of information that needs to be shared, needs to be analyzed. And, you know, at the beginning, you start with the most, I'm going to say, significant system which, you know, the vehicle is one, the signalling system

is the other, and the power distribution are basically the first one you tackle. And after that, you move to other kind of communication systems and information system.

FRASER HARLAND: And so would it not have been better for someone like you to have been in that role from the very beginning of the project?

JACQUES BERGERON: Well, it's always nice to be there at the beginning, but, you know, nine months in, you know, a five-, six-year project is still quite very early in the system. So maybe but I don't -- I don't think it would have changed anything as far as the outcome of the project.

FRASER HARLAND: Okay. And did you feel like that was a -- your role was an appropriate job for one person? Did you feel like you had the resources and what you needed in order to fulfill your mandate?

JACQUES BERGERON: Yes, absolutely.

FRASER HARLAND: So I just want to know a little bit more about the state of play of things at the beginning of the project, and then we're going to get into, you know, how things progressed, but sort of a basic question, where did you work?

Where was the sort of physical location of your work? What did that look like?

JACQUES BERGERON: That was on Carling street in Ottawa.

FRASER HARLAND: Okay. And did you spend any time in the MSF, the maintenance and storage facility? Was being in that site part of your job?

JACQUES BERGERON: You know, we had meetings there, but it was not -- it was not my primary working space. And, of course, I spent quite a lot of time at the MSF but quite a lot of time in OTC's office as well, so...

FRASER HARLAND: What was the state of the trains when you arrived on the project? Where was the progress of that, of the vehicles?

JACQUES BERGERON: Yeah, the vehicles were in design phase at that time. There was nothing absolutely produced, so it was basically in -- I'm going to say in design.

The -- that vehicle by itself was produced maybe 1,500 times prior to Ottawa. It is a vehicle that is well known in the industry. So the design aspect of this from Alstom was to make the proper modification so it suits the Ottawa

system.

FRASER HARLAND: And the signalling system was in a design phase when you arrived as well, I assume?

JACQUES BERGERON: Yes, it was.

FRASER HARLAND: Were you -- were there delays already when you arrived? Was OLRTC saying, Things are already behind; we need to get things on track?

JACQUES BERGERON: No, not to my knowledge. It was basically straightforward when I arrived.

FRASER HARLAND: And at the beginning when you joined, what was your perception of the relationship between OLRTC and Alstom and between OLRTC and Thales?

JACQUES BERGERON: On those both accounts, their relations was very good, which is -- basically at the beginning of a project, it's what we call -- it's always the -- you know, in the first year, year and a half, it's the honeymoon type of relationship. Things go well. It's quite normal. So there was -- there was no issues at the time.

FRASER HARLAND: Okay. You mentioned

that these vehicles had been built several times previously. It's my understanding that the Citadis Spirit, which was the LRV in Ottawa, was different in important ways than other Citadis models that had been built in Europe.

Do you have a sense of how different the Citadis Spirit was from Citadis vehicles?

JACQUES BERGERON: Yes. It was -- well, first of all, it has to be built for the climate, which is a cold environment in Ottawa, and then to be fitted with the -- all the equipment related to the signalling system and the automated control system that needed to done by Alstom.

FRASER HARLAND: So would you consider this sort of a new design, new vehicle, or is this a proven system? How would you describe it?

JACQUES BERGERON: Well, I'm going to say that 75 percent of it is proven. You have systems that -- and it's always the case in almost every project is that you -- you're going to enter a phase of repurchasing different systems on the vehicle such as the air conditioning, the brake system, the door system, which needs, you know, minor adjustments and modification to the vehicle to fit those systems, but basically the fundamental

principle of the vehicle was basically the same as it was built in Europe.

FRASER HARLAND: Okay. And what about the Thales signalling system? Was that a new system or a proven system? What was your understanding of that?

JACQUES BERGERON: Well, it is a proven system as far as the architecture of it, but the physical, I'm going to say, packaging of the -- of the system needed to be designed so it fits the LRV vehicle from Alstom and --

FRASER HARLAND: So the physical packaging, you were talking there about the VOBC system in the train, not the wayside equipment obviously?

JACQUES BERGERON: No, no, no, no, just the VOBC. But, you know, the VOBC is one rack actually. It's two different racks, but you have a lot of other, I'm going to say, accessories that are connected to the VOBC just like the transmission antennas, the reading tags on the -- underneath the vehicles and the -- all the connections to the propulsion and braking systems of the vehicle.

So, you know, you have accelerometers

to be fitted; you have all different sensors to be fitted on the vehicles. So it's a packaging, I'm going to say, engineering type of work that needs to be done.

FRASER HARLAND: So it was a proven system, but there were significant adaptations that needed to be made for the Alstom vehicles; is that fair?

JACQUES BERGERON: That's fair.

FRASER HARLAND: And to your knowledge, was this the first time that Alstom and Thales were integrating the systems together?

JACQUES BERGERON: I don't think it was the first time, but it was the first time for an LRV type of vehicle.

FRASER HARLAND: Okay. Because it was a first time and there were new elements and adaptations when you arrived on the project, were there challenges or any aspects of the interfacing that stood out to you right from the beginning?

JACQUES BERGERON: Like I said, it was the physical fitment of the VOBC rack. That was the main challenge. When I arrived, the VOBC racks were -- well, you know, one design option was to put it on the roof of the vehicle within a heated

box because, of course, those are computers, so they need to be kept at a kind of room temperature if I'm going to say so.

But, you know, because of the amount of time -- or not the amount of time but the connections that you need to have and verification on a -- I'm going to say a weekly, monthly basis to the VOBC, that was kind of unpractical to put it on the roof of the vehicle, so we worked with Alstom to basically spare some room in the conductor cabin to fit the VOBC racks.

FRASER HARLAND: Okay. We're going to talk -- we'll talk more about the racks in a bit, but I just want to close out a couple other questions.

The train operator, OC Transpo, was new to running an automatic train system like this as well. Did they have any involvement, that you're aware of, with the interfacing?

JACQUES BERGERON: No, not really. And this is basically the case for almost every authorities that we built a -- kind of a fully automated system. Those are very complex and need special qualifications and experience to deal with that. So the implication of OC Transpo in the

design of and integration of those systems were very minimal at best.

FRASER HARLAND: And when was it that OC Transpo did get involved then?

JACQUES BERGERON: Well, I don't recall them to get really involved in the design other than, you know, viewing the fact of, you know, where was all the accessories, the VOBC installation and everything that formed the system. But no, I'm going to say, technical implication in any of those part of the system I'm going to say.

FRASER HARLAND: And that's a -- you're saying that's a standard practice in other projects that you've seen as well, that the operator has no involvement at that stage?

JACQUES BERGERON: Yes. That's pretty much the same. It's been the same for everyone, maybe except Vancouver because they were basically one of the first to have for the Expo in 1982 [sic] that had an automated system.

But at that time, it was basically Alcatel at the time that did this, and so they gain probably more experience than anybody else in automated system. But other than that, the authorities do not get really involved in the --

I'm going to say the design, installation, and testing of the automated system.

FRASER HARLAND: So the involvement of the operator is quite late, and it's really only at the operation stage of the vehicle; is that --

JACQUES BERGERON: Yes, yes, it's how to operate it and how to -- you know, to react to different faults that we may get and what to do in this case but not in the design or installation of those systems. Those are very, very specific sets of tasks that you need to have.

FRASER HARLAND: Okay. I want to turn now to talk a bit about the contractual arrangements between OLRTC and Alstom and OLRTC and Thales. So I understand that Alstom and Thales each had a subcontract with OLRTC; is that right?

JACQUES BERGERON: That's correct.

FRASER HARLAND: And there was no contractual arrangement between -- directly between Alstom and Thales?

JACQUES BERGERON: No, not at all.

FRASER HARLAND: Okay. So typically on a project like this, would someone at OLRT review the subcontracts to assure that they aligned in terms of schedule and in terms of the requirements

that each party is meant to be fulfilling?

JACQUES BERGERON: Yes, they would be.

FRASER HARLAND: Do you know who would have done that for OLRT in this project?

JACQUES BERGERON: Well, we had, you know, a project manager that was dedicated for Alstom and Thales contractual side plus the procurement director that would be involved in the -- I'm going to say the contractual integration of those two parties.

FRASER HARLAND: Okay. Do you know who those individuals were? Just the positions. And it's fine if you don't, but...

JACQUES BERGERON: You know, for some reason this morning, I got a blank, but what was his name? Main, you know, project manager for those was Alex Turner. That was -- that was there before I arrived, and he was the ex-Bombardier as well, so...

FRASER HARLAND: Okay. And I assume given your timing and your -- when you arrived on the project, that you had no input or involvement with the negotiation of the subcontracts?

JACQUES BERGERON: No, I did not.

FRASER HARLAND: But did you, as

director of integration, review OLRT's subcontracts with Alstom and Thales?

JACQUES BERGERON: Well, of course I read the contracts and understood, you know, the level of implication of both companies within the -- you know, the final project which, you know, to my experience which I'm not -- excuse me, I'm not a lawyer, but that, you know, those two contracts were basically specific and quite correctly directed as, you know, whatever the interface between them might be, the end product has to be functional and safe.

And that was -- that was basically a good step regardless of, you know, their contractual issues they may have.

FRASER HARLAND: So I just want to make sure I understand what you just said. So you said they were specific, and there was sort of a focus on an end goal. Can you just maybe rephrase your last answer for us?

JACQUES BERGERON: Well, basically both parties had the obligation to work with -- you know, between themselves to make sure that the system work as specified and that the safety level was correct, you know, to protect the public.

FRASER HARLAND: Okay. And based on the contracts you're saying or just --

JACQUES BERGERON: Yeah, yeah, based on the contract. You know, both had the obligation to work together to make the system integration within the -- you know, the entire system to be functional.

FRASER HARLAND: Okay. And so when you first reviewed the contracts when you arrived on the project, was there anything that stood out to you or were there any -- did you have concerns about their alignment?

JACQUES BERGERON: No, not really, no.

FRASER HARLAND: Okay. So I want to speak to you a bit about the schedules in the contracts. It's my understanding that Alstom at least represented that they were expecting a finalized ICD document in April of 2013, so effectively from the beginning of the project.

Do you know anything about that, or is that your understanding?

JACQUES BERGERON: It is -- it is my understanding, and I know where that comes from. And to have a finalized, you know, ICD at 2014 is kind of, I'm going to say, a big dream. Never

been -- never seen something like that.

It is a very complex interface and to have -- and, you know, if you take a look at the documents dated in 2014, it's clearly said that it is a preliminary ICD. It's preliminary documents to set out the base of the interface between the two parties, but by no mean it would be final.

FRASER HARLAND: And you just said that you know where that comes from. What did you mean by that?

JACQUES BERGERON: Well, you know, I -- it's not a secret that Alstom sued OLRT for lateness, and I was -- I was a witness in that -- in that court case as well. And we saw, you know, documents that were said to be final in 2014 when, you know, the integration -- when the vehicle was not even finished to be designed and the suppliers to be fully on board, so that was completely erratic.

But to -- and Alstom knows it as well, but to make their points, they tried to do that, to say that the lateness that happened later in the project was not their fault, which is correct, I guess, but seeing that before, but by no mean, you know, the ICD integration between vehicles could

have been final in 2014.

FRASER HARLAND: Okay. So it's your view that it's not a realistic or achievable expectation that you have a finalized ICD that early in the project?

JACQUES BERGERON: Correct.

FRASER HARLAND: And just -- is that always true? Would it not be possible for a proven signalling system that -- you know, you have this box, you know it works, and you can just -- you can have an ICD and it -- you know, you basically say it's ready to go off the shelf, and we can -- I'm just trying to make sure I understand. Is that just never possible or --

JACQUES BERGERON: No, it's not -- it's never possible. It's not a plug-and-play just like we say in computer terms. It's not a plug-and-play system. There's too many interfaces to be developed, and, you know, there's lots of details.

And I can -- I can -- I can explain maybe one of them, if I can, as an example, is that the automated system works in, you know, the -- you have to know where the vehicle is at any time on the track, and that happens in three ways.

You have sets of accelerometers in the

vehicle that's going to tell you if the vehicle is accelerating, moving steadily to be able to know what travel the vehicle has done.

Plus you have a teethed wheel on the bogie, which is the set of wheels and motors underneath the car that counts the turn of each wheel on the vehicle. And finally, you have RFID tags that are positioned between the tracks that the vehicle reads when it cross over it.

So you have three systems that define the exact position of the train on the track, so there's a limit in where that -- those -- where we're talking tag readers that are installed on the vehicles, and there's a limited amount of distance that the cable can safely transmit their signal without any interference.

And this was one of the -- one of the interface that we had to work with between Alstom and Thales to make sure that those antennas are located correctly and that we have to minimize the length of the wire that connects those antennas to the VOBC. So that's only one of 119 different interface that needs to be settled, so it's quite -- it's quite complex.

FRASER HARLAND: Okay. So there's just

such a high level of complexity that to have something settled so early on is just not possible from your perspective?

JACQUES BERGERON: It is impossible in my perspective.

FRASER HARLAND: I'm not asking you to interpret the contract for us. That's for the lawyers, but if the contract said you'll have a finalized ICD in April 2013, is it your view that that was, you know, unreasonable and wasn't going to happen?

JACQUES BERGERON: Yeah, it was unreasonable. And I have another examples of, you know, system not related to the VOBC but to the radio system that Alstom said that they want to have the final radio to be given to them or the interface to be given to them in April 2014, which was completely impossible to do since, you know, Ottawa went out to the P25 system.

And it was in the early stage of development, and we couldn't get that information, but that's what Alstom put in this contract, but, you know, those are stuff that we can debate later.

They're -- excuse the expression, but fairly small details as far as the radio is

concerned, but, you know, you cannot give the physical and final information so early in the project.

FRASER HARLAND: Okay. But to be clear, OLRTC agreed to this contract as well?

JACQUES BERGERON: Yeah, I think there's a -- you know, at the time, I don't know who from OLRTC negotiated that, but I think it's just a -- you know, kind of an oversight of not knowing what kind of complexity and importance those arised, but, yes, it was in the contract.

FRASER HARLAND: And it's fair to say that Thales had a different expectation of timing? Was that how things appeared to you?

JACQUES BERGERON: I wouldn't say that they did. Of course for them, they're going to design their system a little bit faster than their -- than the vehicle is going to be designed.

So, yes, they might have -- we had some elements that were ready way before the vehicle was ready to be -- to be integrated, but that's their -- that's their system. They know better of them.

And I think they can do a full system within two years as opposed to a full system

within -- you know, railway system takes -- with the infrastructure, it takes five years or so.

FRASER HARLAND: And then just to finish on this point, is it fair to say that in an ideal world, you'd have someone with the expertise from the beginning of the project looking at two subcontracts like this to ensure that the timing is reasonable, the expectations are reasonable and setting that out, ensuring that that's there from the outset?

JACQUES BERGERON: I mean, in an ideal world maybe, but when you start a contract like this, the focus is much more on the supplier, the overall schedule, how your manpower is going to be available to do those.

There's some details that, you know, you're not going to catch up out of, I don't know, 20,000 requirements in those type of contracts. There's a few that are not necessarily important. The most important ones are do you have the brain power, the manpower to bring a contract of that nature to fulfillment.

FRASER HARLAND: Okay. And is it your understanding that Alstom and Thales would have been unaware of the schedules set out in the

other's subcontract?

JACQUES BERGERON: No, I don't -- I don't -- I don't think so. I think they had a very good idea of what they needed to do and what the obligations or obligation the schedule of each of the parties were.

But on a very high-level system -- you know, we used to talk in program management a 40,000-feet level. When you get to 10-feet level, there's lots of details that, yeah, could have been better than this, but this is basically normal. And I've seen that in every single contract that I've -- that I've worked on.

FRASER HARLAND: Okay. So we've talked a bit about schedule. I want to talk a bit more about the requirements of each party under the subcontracts.

So you told us that this was not a plug-and-play system, but I think -- was that what Alstom -- what was your sense of what Alstom was expecting from Thales in terms of the VOBC rack?

JACQUES BERGERON: Well, you have to understand that Alstom and Thales are competitors in this field. They both have signalling systems. They -- you know, Alstom has a signalling system

division. They also have automated system that goes into subway cars and whatnot.

And they have a very good idea how their own system works. So for them, it is kind of normal to say this is the way it's going to go; however, Thales has a -- of course not the same system design as Alstom would have.

So, yes, they could have expected that the Thales system would have been similar to theirs, but, you know, it's never the case. It's -- you know, when we -- when we talk in this thing, it's similar, but there's lots of differences between systems, and this is normal in the industry. Everybody has got their own way of doing the same outcome I'm going to say.

FRASER HARLAND: But did you see Alstom expecting, you know, a plug-and-play rack and Thales was expecting to be able to give, you know, an unassembled group of parts? Is that a fair description of the sort of difference in expectations?

JACQUES BERGERON: Well, I don't know if it's -- if it's fair to say that. You know, I'm thoroughly convinced that Alstom knew the systems that Thales would provide, but for program

management reason and scheduling reasons just in case that something happens in the future, they're going to say that they expected a plug-and-play. With the experience of Alstom, I don't believe this is true, but this is what they said.

FRASER HARLAND: Okay. So your view is that there wasn't an issue -- so you didn't see an issue in what was specified in the two subcontracts in this respect?

JACQUES BERGERON: No, I didn't.

FRASER HARLAND: So you don't see a contractual issue as much as a strategic choice on the part of Alstom is your -- is your view here?

JACQUES BERGERON: Yeah. I believe that, you know, we can -- we can play on terms, and like I said earlier, I'm not a lawyer, but, you know, you have to have something to work on when you design the vehicle.

And, you know, when they issue their ICD, they needed a reply from Thales to make sure that all the receiving ends of their, I'm going to say, integration work has something to work on early on in the project, which was done actually, that both preliminary ICD, one from Alstom and one from Thales were issued quite early in the project,

so we can start discussing the differences that happened in between the two systems.

FRASER HARLAND: Can you speak a little bit more about this issue of the physical location of the VOBC rack early in the project? Again, is that not something that could have been defined quite early, sort of Alstom saying this is the space you have and Thales being able to meet that? Why was that so difficult?

JACQUES BERGERON: Because the difficulty was mostly the size and the cooling of the VOBC rack. And, you know, we had an interference, I'm going to say, of -- don't laugh but 5 millimetres. We were missing 5 millimetres for installing the VOBC rack inside the conductor cabin. That would interfere with the door that give access to -- to the -- from the driver to go into his cabin.

And we did work with Alstom and Thales to make sure that we reposition stuff. And the main problem of the rack inside the cab area is mostly a collision interface, meaning that whatever your -- you hold a computer or any other type of material, it has to withstand movement in case of an accident so they don't detach themselves.

So the frame that put the -- that holds the -- all the elements of the VOBC has to be a little bit bigger, but at the end, we found those millimetres. And with slight modifications to the front nose of the vehicle, we were able to fit it in the cab. So that was basically the issue.

FRASER HARLAND: Would you say that there was an illogical or unnatural division of responsibility between Alstom and Thales as far as the rack and the testing of the rack goes?

JACQUES BERGERON: Well, there was -- there was issues on testing of the racks because Thales asked Alstom to test the VOBC, were going to take a look at series testing, not the qualification testing because there's two types of testing, to make sure that in every car that you test, that all the connections are done correctly and the information flows normally.

And at one point, to test one of the connection, Alstom would have to remove one of the elements of the VOBC, and Alstom didn't want to take that responsibility.

FRASER HARLAND: And you think that's normal for a train manufacturer not to want to have to deal with the inside of the rack and to leave

that to Thales?

JACQUES BERGERON: Well, it is -- it is normal for a train manufacturer not to dismantle or disassemble any supplier element as far as responsibility is concerned.

FRASER HARLAND: So why would've the division of responsibilities been set out that way? Do you have a sense of that?

JACQUES BERGERON: I don't recall why. You know, the origin of this, I saw, you know, from the -- it was not necessarily being able to be seen early on because that came back later as part of the Thales testing specification.

So this is where it all started that you had to take an element -- I'm going to say a unit out to test the communication. You know, I was talking about the antenna earlier that picks up the tags between the tracks.

If you want to test the connection between those, you have to remove a rack and physically go and test the communication between those two ends of a wire without passing through the computer.

So that was a -- that was a main point of removing one of the elements in the rack, which

makes sense, but we turned out to be able to test it a different way to accommodate both parties, but that was not a design issue. That was a responsibility issue.

FRASER HARLAND: Right. And do you think some of these division of responsibility issues had to do with the parties trying to save costs on various things that they were responsible for? What might have been behind this?

JACQUES BERGERON: Yes, of course. I mean, if we -- if we -- if my memory serves me right, removing the rack takes about five minutes. It's very well done, and, you know, they're modular in design, but the -- at the end of the day, Alstom agreed to do that to that extent, and we paid them for that if my memory serves me right because it was kind of insignificant.

But I do understand, being a vital system, that Alstom didn't want to take the responsibility. But those were one of the first steps in the testing process, and if something occur, we would have seen the results in further tests down the test procedure if the reconnection after reinstalling that unit would be -- wrongly be done.

FRASER HARLAND: Is there anything from OLRTC's side in terms of how these responsibilities were divided that would have led things to be more cost-effective or --

JACQUES BERGERON: No, no, no, that came directly from Thales' testing specification, which we didn't -- we didn't see at -- a project signature and contract signature or very early in -- actually, it came quite late in the project, which is normal. I mean, you don't have, you know, test procedure until your design is complete and you know the full environment.

FRASER HARLAND: Okay. So maybe we could move on to have you speak a bit about the interface meetings that I understand took place between the parties.

So am I right that there were a number of interface meetings or workshops that OLRTC hosted between Alstom and Thales?

JACQUES BERGERON: Yes, that is correct.

FRASER HARLAND: Was it part of your role to organize these meetings, or how did that work?

JACQUES BERGERON: Yes, yes, it was

part of my job.

FRASER HARLAND: Okay. Were these kinds of meetings taking place before you arrived, or did --

JACQUES BERGERON: I don't know if they had meetings before I arrived to be frank with you. I know that we started when I arrived with the -- like I said, the physical interface between the VOBC and the vehicle.

FRASER HARLAND: And when did these meetings take place?

JACQUES BERGERON: Oh, we had numerous meetings. I cannot recall, but we had --

FRASER HARLAND: I mean, I'm not asking for each specific date, but they started close to when you arrived, and did they go until you left? What did that look like?

JACQUES BERGERON: Yes, we started to have that when I arrived, and it was, like I said, a little bit iffy at the beginning because Alstom and Thales are competitors in the same market.

But, you know, the exchange of information was, I'm going to say, difficult to begin with, but as the time went out and the project moved in time, it became easier and easier.

And then we start to have meetings in locations -- in Alstom's locations and Thales' locations, and by the time -- I'm going to say by 2016, Alstom and Thales would communicate on their own and keep me in the loop of what they exchange.

And those were not big decisions to make, but, you know, details of interfaces that they could deal between them without us having to interfere or intervene or direct them.

So it started very difficult as far as a -- I'm going to say cooperation viewpoint, but by 2016, 2017, it went quite smoothly I'm going to say.

FRASER HARLAND: And you said that -- so there may have been some reticence between the two parties for sharing information because of the competition between them? Was that your -- was that why, do you think?

JACQUES BERGERON: I think originally, yes, but at the end, it's -- you know, you want to make the vehicle, you know, work with the system and integrate it properly.

And because they don't have the same design of course, Thales would not share with Alstom their internal design of, you know, how the

computer calculates things, but as far as, you know, wiring connection and what information that you need, it became much more open.

And those are not proprietary information. You know you have to be able to connect with the TCMS, which is the train control and monitoring system, to pass some information about, you know, the speed of the vehicle, what's the braking rate they have, what's the acceleration rate they have and so on and so forth.

So those are not proprietary information, but how the Thales deal with that information is proprietary, but Alstom doesn't need to know that to be able to do this.

So, yeah, originally there was -- there was some, I'm going to say, hesitation about sharing information, but at the end, they understood that it doesn't affect preparatory information either side from Alstom or Thales.

FRASER HARLAND: Were there other reasons that you saw that might have explained this difficulty at the beginning in terms of sharing information between the two parties?

JACQUES BERGERON: No, I don't think so. I think it was mostly commercial issues.

FRASER HARLAND: And so can you explain just generally what the purpose of the interface meetings was? What did these meetings look like? What was -- what were you trying to get out of them?

JACQUES BERGERON: Well, basically we need to know exactly, you know, which signal per signal needs to be exchanged, where to find it on the vehicle and where to plug it and transfer it to the VOBC and in what form, what sequence, the timing of it.

Mostly everything works within about 50 milliseconds, but if there's any issues about timing, these need to be discussed so -- and sometimes the design needs to be changed to accommodate this.

But in Alstom case, the most, I'm going to say, serious interface problem that we had was with the double-cut connections to the breakers on the vehicles, which Alstom -- I think they said we know what a double-cut connection is, but at the end of the day, they didn't.

It's a little bit to say what a double cut is, is that everybody is aware of, you know, a three-way light switch that you have two -- you can

operate a light in your house from two different locations. So you have basically three wires that are connected amongst the two light switch.

In Alstom case, this is how they manage their double cut, but on Thales side, they need four wires, and that at the end of the day, Alstom had to make a retrofit on their vehicles to add about 20 to 40 wires, depending on was that the main VOBC or the slave one.

So that came out -- this realization came out quite late for Alstom; however, it was in the ICD from Thales from the beginning, from the very first ICD that they issued.

And, you know, it did create -- of course, commercially speaking, Alstom was not happy about it, but there's nothing we could do.

FRASER HARLAND: Okay. But in very basic terms, the two parties are coming together. They're sort of refining things, making agreements between one another, and then they're supposed to take those away and implement them into their design and into their ICDs? Is that --

JACQUES BERGERON: Yes, that's fair to say. That's fair to say.

FRASER HARLAND: Okay. And the ICDs

and then I believe it's called a black box interface, BBI, are those the two main interfacing documents that are being discussed at these meetings?

JACQUES BERGERON: Yes. Yes.

FRASER HARLAND: Was it your understanding that the representatives from Alstom and Thales who came to these meetings had the ability to sort of bind the companies to what was discussed there, or were they just there to collect information, and then the binding effect would be through documents? Like, how did that look?

JACQUES BERGERON: Well, I specifically asked. You know, before we go -- of course the binding always -- as far as the final state will always be through documents, but I always ask to have somebody there that can make the decision on the spot that if we work in that direction, will it go to the end and not be stopped by someone else at a later date.

So I don't know if it makes sense. What I'm saying is that I don't want to endure -- to say that we have a design, we found a solution, that both parties agrees to implement it and it won't change in the future.

So that was my requirements in front of those -- you know, the two parties is that somebody there, that we work together to find a solution for interfaces, that it won't be turned down later in the -- in the design process.

FRASER HARLAND: And so it was your understanding that the people who came did have that authority?

JACQUES BERGERON: Yes. Yes.

FRASER HARLAND: Who were the key representatives from Alstom and from Thales at these meetings generally?

JACQUES BERGERON: Well, one of them was Lowell Goudge from Alstom. And, you know, sometimes he even brought some design engineers from Valenciennes in France.

And on the Thales side, it was -- jeez, I haven't talked to him in four years, so I don't -- I don't fully remember his name. What was his name? Very tall guy. Jeez, I don't remember his name.

There was -- there was a -- kind of a chief engineer on the Thales side that, you know, work with us in all those interface meetings.

FRASER HARLAND: Okay. So agreements

are being made at these meetings, and then I understand that at some point, there was an issue where Alstom made the choice to say we haven't received a new finalized ICD, so we're going to use Version 2 -- I believe it was Version 2. You can tell me -- and we're working from that as our interface until we get another one. Do you recall an issue like that happening?

JACQUES BERGERON: Yeah, I don't know what version it was, but, yes, they did work on the Version 2, but as I explained, the double-cut situation they didn't understand, and that's what created the main big problem of, you know, having to retrofit those -- all the vehicles that were already built in that -- in that way.

But they did work under the document, but they didn't understand the schematics that were presented in those ICDs. Or I'm going to say it's a matter of interpretation, but, you know, it turns out to be the same.

They fully didn't understand that what -- what a double-cut connection is, and they -- I think they went to their own design saying their understanding, but it was not the case. So, yes, they worked on the right document,

but the interpretation of that document was wrong.

FRASER HARLAND: And there wasn't any issue of them working on a finalized document as there had been sort of new draft changes being approved and those later changes not being implemented? Do you recall that?

JACQUES BERGERON: Not really. You know, once we discovered, you know, the interpretation, after that everything moved pretty much straight forward. The problem was to actually find the time and the space to implement those modifications.

FRASER HARLAND: Okay. Because in January 2016, Alstom submitted a variation to account for differences between Version 2 and Version 3 of the ICD. Does that -- do you recall that at all or --

JACQUES BERGERON: Oh, boy. It's six years ago.

FRASER HARLAND: And I understand for sure.

JACQUES BERGERON: It's a -- you know, we had a lot of -- I'm going to say a lot of interface issues with -- contractual issues with Alstom throughout the contract, which is

basically -- I worked with Alstom on six or seven project, and this is their way of protecting themselves.

It is a type of program management that they have adopted. So we had a lot of them. To that specifically, yes, but at the end of the day, we kind of agreed that the ICD presented by Thales was quite clear, so, you know, they had to do it.

And we did at that time offer to monetary compensate for that at that time, but they didn't accept. They wanted more. So, you know, it's -- at that point, it became a negotiation issue more than a technical issue.

FRASER HARLAND: Okay. And were -- I understand the meetings were minuted. Were there expectations for the parties to implement changes based on the minutes coming out of the interface meetings?

JACQUES BERGERON: Not necessarily the minutes. I'm going to say -- like I said earlier, when the interface document, whatever it may be, a plan, a schedule, schematics or whatever were final and, you know, finally released, this is when I expect them to do the implementation.

The only thing they can do as far as

the minutes is -- what I would do and what I used to do is to get ready to be -- to implement that change as per the official minutes, but the final one -- because there's always, you know, sometimes changes that comes when the final document comes in. You don't want to be caught to be redoing things twice. So, yes, I expect them to get ready but not to implement it as the minutes are issued.

FRASER HARLAND: Okay. So the normal industry or engineering practice would be to wait until there's an actual ICD document to work from before actually implementing changes? Is that --

JACQUES BERGERON: Well, you know, ICD or, you know, it can be a -- like I said, a drawing, a schematic, anything that is done final because you cannot design per minutes of meetings really. You need drawings. You need schematics. You need more information.

But, yes, it is general practice that you have to wait for the official documents. I'm going to say the design documents that are final.

FRASER HARLAND: Okay. And you spoke about the double-cut connectors. Are there other design aspects of the interfacing that caused significant challenges that you recall?

JACQUES BERGERON: Yeah -- well, significant, no, but the connection between two trains, you know, the way to make sure that we know where the active cab is was a challenge, but we -- you know, we found a solution after three or four iterations to make sure that it works in all circumstances because you need to know where the front end of the vehicle is at all times and this distance. So those are 48 metres car. They can work in tandem as well, so that's 96 metres.

In an automated system, you need to know exactly what is the train composed of and where's the front of it at all times in all types of communication because you can -- you know, you can -- you can connect those vehicle any which way because, you know, you have a main VOBC, I'm going to say, at the front. They are mostly at the end, but you have a slave one as well which can interface between each other.

So when you couple two vehicles, then you have two main, two slaves. Who's taking the control of it? It's quite important to know.

And, you know, we had, you know, issues on that to make sure that it works in all type of combinations when you connect two cars together,

but that was a much lesser issue than the double-cut ones.

FRASER HARLAND: And just on a practical level, when a new interfacing document like ICD, BBI or, as you said, design document was produced, was that sent through OLRT to -- from Alstom and Thales or vice versa?

JACQUES BERGERON: Yes, it always came through OLRT before we distribute it to the other parties.

FRASER HARLAND: And would you have been involved in that process, or was that someone else's responsibility?

JACQUES BERGERON: Yes. No, I was involved in this because we had to -- my team, we had to review that what was discussed in the minutes or in the meetings was reflected accurately in the -- in the design document.

FRASER HARLAND: And are you aware of any delays between receiving and sending out design documents in the process?

JACQUES BERGERON: Yes. Yes. Sometimes there's delays because we have to go back before the assurance because there's some mistakes. And I can't -- I can't recall specifically, but,

you know, it happens a few times.

FRASER HARLAND: So can you just explain that? Because you see it and then you see there's mistakes, so you're going back to that party before issuing it to the other? Is that what you mean or --

JACQUES BERGERON: That's what I mean, yes.

FRASER HARLAND: Okay. So is it fair to say that generally you'd want to get these documents from one party to the other as quickly as possible?

JACQUES BERGERON: Yes. Yes. And usually, you know, there was no issues. Usually it was a matter of days. You know, between two and three, four days it was shipped from the other side.

FRASER HARLAND: But you do recall that there were -- and I know you may not be able to give me specifics, but you do recall there were instances where there was more significant delay in getting --

JACQUES BERGERON: Yes. Yes.

FRASER HARLAND: When Alstom and Thales disagreed on scope of work or what needed to be

done, how is it that -- was it your role to decide who was going to do what?

JACQUES BERGERON: It was not my role to decide, and it has to go through program management, which is the contractual administration of those contracts. But, you know, I would -- I would -- obviously I would say which instance I want to -- for them to correct the situation, to minimize. Most of the time it's schedule, but it can be cost as well.

FRASER HARLAND: Okay. So in terms of making those recommendations, schedule and cost are the driving factors?

JACQUES BERGERON: Yes. Mostly schedule.

FRASER HARLAND: And did you end up feeling like you were sort of siding with Alstom or Thales more often than the other?

JACQUES BERGERON: No, I don't think so. For me, it was -- it was -- it was a question of functions. It's not a question of who supplies what. I want to make sure that the function is happening correctly, and if it is on Alstom side or Thales side, I don't -- I don't -- I don't really care to be frank with you.

You know, one thing that -- you know, we discussed the physical interface of the VOBC rack within the vehicle. You know, this was targeted directly to Thales to make sure that it fits in this environment. And I didn't want to have any discussion about it because that was more practical for everybody, and at the end of the day, they did it.

But, you know, no, I don't -- I don't care if it's Alstom or Thales that has to do the work. I just want to have the proper outcome for the project.

FRASER HARLAND: Is there ever a reason to prefer Thales from a safety perspective or Alstom for that matter?

JACQUES BERGERON: Well, yes, I mean, those systems are -- so for -- if Thales tells me that if we do it like where they will not be able to meet that specification, then I have to go in Thales's side because, you know, it's a safety issue.

But other than that, if it's schedule, if it's cost or whatever the excuse, that I -- I don't -- I don't really care to a certain extent.

FRASER HARLAND: Okay. Would you say

there were still ongoing issues in ICD integration at the time that you left the project?

JACQUES BERGERON: I don't think there was ICD issues. There were -- there were performance issues by the time I left.

Mostly -- the one that -- it's mostly always the case -- in automated system, it was the braking accuracy or the stopping accuracy of the train controlled by Thales.

You want to -- however, the specifications say you will stop within plus or minus 1 metre at the platform. This was met, but the way we got there had some kind of hiccups I'm going to say.

FRASER HARLAND: Can you just speak to that a little bit more? What was -- what were the problems there?

JACQUES BERGERON: The problem was mostly because of the amount of pulse that we have when we measure the wheel rotation, and you want to have a certain time to readjust when you get into a stopping distance at one point. You don't want to go kind of like this and then stop at the right place.

And you need some processing power, and

you need some information to achieve this smooth without any disruption for passenger. And Thales is, I'm going to say, very -- how can I say this? Pointy about their stopping accuracy. They have to be.

In Ottawa, we have platform doors, but in other systems such as Kuala Lumpur and JFK, when you have, you know, two sets of doors -- I'm sure everybody went to any airport and taking the train that you have the vehicle door that opens, and then you have another door that opens to have access to the platform. Those are platform doors. They have to -- when you're stopping, you have to align those correctly.

And the stopping accuracy in Ottawa however, you know, as far as plus or minus 1 metre was not a problem. It was kind of jerky, if I can express myself that way, to get to that stopping -- that stopping point. You know, you had stop, no stop, stop, no stop until you reach that point.

And that was basically an issue on the communication between the brake control unit of the train and the TCMS which is the train control unit on the vehicle that were a little bit slow -- and this is, again, my memory -- was slow to transfer

that information to the VOBC because we had a teethed wheel that was -- it didn't have enough teat to measure it accurately.

FRASER HARLAND: Okay. And so those issues were still ongoing at the time you left the project?

JACQUES BERGERON: Yeah. They were not -- you know, it's not a safety issue. It's not -- it's more a comfort issue to get there. We saw that in Vancouver as well.

The first generation of vehicle, you know, you start to stop, and then it coast, and then it stops again. You know, you just have to take the train a couple of times to understand that this is how it stops, and then you can prepare for it. It's more comfort things, but it's not a safety issue.

FRASER HARLAND: Okay. From your perspective, the ICDs between Thales and Alstom had been fully integrated by the time you left the project?

JACQUES BERGERON: Oh, yes. Definitely, yes.

FRASER HARLAND: Okay.

JACQUES BERGERON: I'm not going to say

that all the modification that were the result of those ICD have been all completed in all the cars, but all the test units that we were testing, yes, they were correct.

FRASER HARLAND: Okay. I'm going to suggest we take a break until 10:40 now, and then we'll come back with some more questions.

JACQUES BERGERON: Okay.

-- RECESSED AT 10:27 A.M. --

-- RESUMED AT 10:40 A.M. --

FRASER HARLAND: Mr. Bergeron, if I could just take a step back and ask you how you would describe OLRTC's relationship with Alstom while you were on the project.

JACQUES BERGERON: The relationship has kind of evolved throughout the project when I was there. We had four project managers on the Alstom side throughout the project.

Originally, we had a very senior project manager, and he kind of quit to join Kawasaki. And then we had a -- I'm going to say a junior program manager. And after that, it came back to a more senior -- the last two or more senior ones, but I'm going to say that it was kind of up-and-down type of relationship.

FRASER HARLAND: And up and down because of the level of experience on OLRT's side, or was there something on Alstom's side? Why was it up and down?

JACQUES BERGERON: (Technical issue).

THE REPORTER: Sorry, the witness had cut out.

FRASER HARLAND: Yeah, apologies. You -- if you can just start from the beginning of your answer there to why the relationship was up and down.

JACQUES BERGERON: I'm going to say that it was more on the Alstom side, but the change of program manager (technical issue).

FRASER HARLAND: Looks like --

THE REPORTER: Sorry, the witness froze again.

JACQUES BERGERON: Is it back to normal now?

FRASER HARLAND: Yes.

JACQUES BERGERON: Okay. Yeah, it was -- the change of program manager is, you know, you develop a personal relationship with those program manager and a level of trust that builds, and when you -- when you get a new program manager,

you have to start on this all over again.

And, of course, they don't have the same personality, and it is -- you know, it is kind of up and down. That's why I'm saying up and down because it's -- you have to start all over again every time that there's a new program manager.

FRASER HARLAND: Did you feel like you were starting over again in terms of that relationship as well or just more --

JACQUES BERGERON: Yes, on my side as well as far as the program manager.

I want to go back to -- you know, you asked me if there was -- you know, main engineers on the Alstom and the Thales side, and I didn't remember the Thales one, which I did remember now. On the Alstom side, it was Lowell Goudge, and on Thales, it was Paul Dooyeweerd. Don't ask me to spell it. I don't remember. But those, you know, kind of develop some nice communication and teamwork between those two.

And then when -- if we come back to the program management, this is when -- you know, the influence of a program manager on the behaviour of everybody that works in the project is crucial.

And, yeah, having four of them, you had

to start all over, and the second one was a pretty good person but lack of experience. That was, I think, her first big project, and it was a little bit more difficult to deal with.

FRASER HARLAND: Was that Nadia Zaari? Is that --

JACQUES BERGERON: Yes. Yes.

ANTHONY IMBESI: Mr. Bergeron, if I just may jump in to ask you a question here, you had -- you had mentioned earlier that, you know, it was a provision of their subcontract, as you understood it, that both Thales and Alstom had to work together to get the job done, to get things integrated. Do you recall that?

JACQUES BERGERON: Yes, I do.

ANTHONY IMBESI: And so this sort of just ties into what you had just mentioned to us, but in your view, did both parties, Alstom and Thales, adhere to this obligation?

JACQUES BERGERON: I'm going to say yes. You know, you -- I don't -- I don't -- I don't see any actions from either part that say that, you know, they didn't -- they didn't adhere to that.

ANTHONY IMBESI: Okay. Did you ever

have any concerns that they wouldn't or couldn't adhere to that obligation?

JACQUES BERGERON: No, not really.

ANTHONY IMBESI: Thank you.

JACQUES BERGERON: You're welcome.

FRASER HARLAND: Was it your impression that Alstom welcomed your assistance as integration director?

JACQUES BERGERON: I would like to think yes so, on both sides actually.

FRASER HARLAND: Do you know if Alstom had expressed challenges with integration prior to your arrival? Do you know anything about that?

JACQUES BERGERON: No, no, not really.

FRASER HARLAND: How would you assess Alstom's performance during your time as director of integration?

JACQUES BERGERON: I think it was very well done. Alstom was very competent. They -- technically very competent as well. And they're a very, very good, you know, train manufacturer.

They do have some internal problems just like -- you know, Alstom is composed on many -- well, many -- they have three or four different divisions inside their mass transit

build-up.

You know, they -- there's a train division. They have their propulsion division, they have their signalling division, they have their communication division, and those act almost independently from one another. And it's not because the propulsion comes from Alstom as opposed to, I'm going to say, GE or Toshiba or whatever, that it's going to be easier. They have their own structure to deal with.

So I know that internally they had some issues with the propulsion system, mostly the line contactors. That wasn't up to the task in our case.

But overall, I think that, you know, they performed very well. I learned -- and this I cannot -- I cannot say for sure at the end of the -- after I left, there was a lot of lateness in the project. I don't know why, and I'm surprised by it to be frank with you.

But by the time that I was there, I think they performed correctly just like as seen in any other project that I worked on with them or with Bombardier.

FRASER HARLAND: Okay. So if we can go

through some similar questions on the Thales side, how would you describe OLRTC's relationship with Thales?

JACQUES BERGERON: You froze. Can you repeat the question?

FRASER HARLAND: I just wanted to ask some similar questions with respect to Thales and ask how you would describe OLRTC's relationship with Thales.

JACQUES BERGERON: I think our relationship was very good. Thales is a very competent company as well. Their project manager on the Thales side, Michael Burns, was new to the business, so it took a little bit of time, I'm going to say, to mould him into a mass transit mentality.

There's quite a lot of details that needs to be ironed out, but overall, I think the relationship was very good. At least I enjoyed it.

FRASER HARLAND: And would you assess Thales's performance as strong during your time on the project as well?

JACQUES BERGERON: I assess it as very strong, yes.

FRASER HARLAND: And they also -- from

your perspective or at least you hoped that they welcomed your presence as systems integrator?

JACQUES BERGERON: I -- yes, I assume so. There was -- I think -- I mean, nonverbal and a feeling that we had in the meetings, I'm going to say, after 2016 it was very friendly and very cooperative. So, yes, I enjoyed it, and I assume that they did enjoy it as well.

FRASER HARLAND: And that was primarily you said with Lowell Goudge on Alstom's side, and can you remind me the name of the Thales side again?

JACQUES BERGERON: Yeah, it's tough. It's Paul Dooyeweerd. He's -- you know, the name is from the Netherlands, so don't ask me to spell it. I don't remember. But very, very competent. Those two were very competent people.

FRASER HARLAND: So you enjoyed productive relationships with both of them?

JACQUES BERGERON: I truly enjoyed the relationship that we had.

FRASER HARLAND: And what would you say the collaboration between Alstom and Thales was like? You know, you mentioned earlier that often there's a honeymoon period at the beginning of a

project. Did that disintegrate over time or --

JACQUES BERGERON: That was the -- that was the inverse with -- between Alstom and Thales. I think originally, as I say, they were treating each other as competitors, and they never talked to each other directly, and they were talking to each other via myself when we're talking about technical issues and via the project manager when you're talking about contractual issues.

But as the period -- the time went by, they started to, I'm going to say, establish a very good cooperation in between them, at least technically.

FRASER HARLAND: So I want to move on to talk a bit about testing. I assume that as director of integration, you would have been involved in and you stayed apprised of the testing that was going on at least as it related to the vehicles and the signalling?

JACQUES BERGERON: Yes.

FRASER HARLAND: Are you aware of -- did -- the challenges with interfacing and some of the delays experienced through interfacing, did that have an impact on testing?

JACQUES BERGERON: Not really. We had

a few -- a few little things to deal with, but the lateness on testing and the challenge on testing was to actually have a system to test on. It didn't really involve Alstom or Thales technical issues per se.

FRASER HARLAND: So what system to test? What do you mean by that? Like, what --

JACQUES BERGERON: Well, you know, a system has to be complete or to a certain extent to be able to test, meaning that I need -- I need the track, I need the power, I need the communication system. I need -- I'm not going to say the Wi-Fi, but, you know, it's -- the control system of the train is radio-based, so all the wiring and connections to the control rooms has to be done in order to be able to test. If I don't have that, I -- you know, yeah, I can run on a track, but it's kind of worthless.

FRASER HARLAND: I understand that originally -- and this might have been before your time, but originally there had been a plan to manufacture two prototype LRVs in France, and then the plan was to do them in Hornell. And eventually one was done in Hornell, and one was done in Ottawa. Were you aware of those changes in plans

and manufacturing?

JACQUES BERGERON: Yes, I was. Yes, I was aware of it. Just to correct you, the original plan was to build two -- build and test two LRVs in Valenciennes in France and then build one in Hornell or -- this I don't recall if it's completely exact but then start production in Ottawa.

But for scheduling purposes, it was -- and it was mostly because of transportation issues between Europe and Canada that the manufacturing of trains in Europe was abandoned, and there was -- we built one train in Hornell, and the second one was built in Ottawa. And that was a scheduling issue and not anything else.

FRASER HARLAND: Did doing that delay validation testing?

JACQUES BERGERON: No, not really. The change of the location for build a train didn't affect the testing. Like I said, what affect the testing was the availability of the test track in Ottawa, which was supposed to be 4 kilometres of dual track so we can test -- on one track, we can test the vehicle, and on the other side, we could test the control vehicle by Thales.

But, you know, if my memory serves me right -- and this is OLRT's, you know, responsibility -- we're supposed to have the track available in the late 2016, but we actually got a 1 kilometre of track I think was in early 2017, so almost a six months' delay there, and we didn't have the full 4 kilometres of tracks available to us for testing. And that was the main point that slowed down the testing phase.

FRASER HARLAND: I guess I was just wondering because originally -- I mean, in France at least there would have been construction and validation testing done there. So you would have had validation testing done much earlier than could happen in Ottawa? Is that --

JACQUES BERGERON: Yeah, well, the validation would have been, you know, maybe save a couple of months because you couldn't test on the actual system that you're going to run on to.

So you test, you know, if your braking system is working, if your acceleration system is working. You can test communications, but, you know, everything else is test in shop, just like, you know, the lights, the doors, the air conditionings, everything else.

So you're not going to gain a whole lot to have a special test track to test since we couldn't install the Thales system in France. That wouldn't have -- maybe we're going to save a couple of months, but that's about it.

FRASER HARLAND: So there wouldn't have been any ability to do interfacing testing earlier if it had been done in --

JACQUES BERGERON: No, I don't -- I don't believe. Not at that time. I don't believe so.

FRASER HARLAND: So you've said there's delayed -- a delay of the track being ready. Do you know if there was also an issue in terms of access to the track for Alstom in terms of testing?

JACQUES BERGERON: That is funny because, you know, a consortium OLRT is built by SNC-Lavalin, which is mostly responsible for system. Dragados, that's responsible for the horizontal build, meaning the track and the tunnel, and EllisDon for the vertical construction.

And, you know, when we -- when we say we need something ready, we need it at 100 percent, and at one point, the access -- we had a small access tunnel from the MSF to the main track, and

we -- you know, construction was done and ready, you know, 99.9 percent, but we were missing 20 metres of --

FRASER HARLAND: Sorry, Mr. Bergeron, you froze again on us there.

JACQUES BERGERON: Sorry. Where can I restart? Can you hear me now?

ANTHONY IMBESI: Perhaps if we could just go off record for a second.

-- OFF THE RECORD DISCUSSION --

ANTHONY IMBESI: If you can just explain your comments about the small tunnel and last 20 metres, and then we can take it from there.

JACQUES BERGERON: Okay. To have access to the main track, we had from the main -- from the MSF, we had 800 metre long tunnel that goes underneath the CN tracks, and in the middle of it we were missing 20 metres of catenary wire, so no power. So that means that we couldn't get out to the main track, and that took a couple of months to solve as strange as it may sound.

So the access to the track was limited, and, you know, we had some, I'm going to say, drainage issue. We even had at one point a train that was frozen in the middle of that tunnel, and

we had to wait until the weather came a little bit better.

So, yes, we had some issues to get to the main track early on the project, and that was in early 2017, but after that, it was -- it was pretty good. However, we had only 1 kilometres of dual track. It was not enough to complete quite a lot of testing actually.

FRASER HARLAND: So from your perspective, was track availability the main impediment to progress on testing?

JACQUES BERGERON: Yes, it was not only on testing because we had to train the OTC drivers as well. So OTC was very accommodating to sometimes train their drivers at night while we were testing during the day, but, yes, the availability of the track was the main point that kind of slowed down the project.

FRASER HARLAND: And so in terms of access, there's this physical access issue, but it sounds like there's also sort of a time availability issue as well. Is that --

JACQUES BERGERON: Yes, yes, there is because now you have to -- you have three types of tests. You need to test the vehicle, you need to

test the Thales system, and then you need to train the OC Transpo drivers.

So when you don't have enough track, it's very difficult to manage all of those testing simultaneously when, you know, on a 4 kilometre track, it would have been kind of much easier and more effective way of testing.

FRASER HARLAND: And did that have an effect on finalizing the interface? Like, was there design and then testing and then more design, or how did that work?

JACQUES BERGERON: Yeah, there was -- there's always -- once you start testing, there's always some modification that needs to happen, but those are kind of minor. It doesn't -- usually you find a problem on one interface, but you can test all the others, but, yes, it is normal to have some modification during testing.

FRASER HARLAND: And for SPICO testing, was there -- do you recall a disagreement between Alstom and Thales about who was responsible for that work?

JACQUES BERGERON: No, I think the -- as we discussed earlier, there was no disagreement about who is doing what. The only problem was that

Alstom didn't want to remove one of the units of the VOBC to test the communication to the tag antennas, but once that solved, that we paid, you know, Alstom to do that. After that, the static PICO went basically flawlessly.

FRASER HARLAND: Okay.

ANTHONY IMBESI: Mr. Bergeron, was the track access the critical aspect that delayed the testing, or were there other aspects as well in terms of delays in design, supply chain issues that drove the delay?

JACQUES BERGERON: Well, we had a track gauge issue that, you know, in early -- late 2017, early 2018 we had a track gauge issue. To explain the track, centre to centre of the rails is 1,435 millimetres. Alstom's document specified that the track tolerance would be minus 1 millimetres to plus 3 millimetres.

And that is corroborate by -- and it is normal. FRA, the Federal Railway Association, specify that for our type of tracks, it's plus or minus 1 millimetres. APTA, the American Public Transit Authority, also specify or suggest that it is minus 1 plus 3.

However, when we measure the track and

we start to get to a higher speed of testing, we notice that the vehicle was doing some climbing, and after measuring the track, we were at -- some places minus 6 millimetres, and this was a big issue that delayed, you know, kind of high speed testing.

FRASER HARLAND: You said SPICO testing went near flawlessly. What -- were there other types of testing that posed more challenges?

JACQUES BERGERON: Just like I said, the track -- the high-speed test was a little bit of a hiccup because of the track gauge issue, but, you know, when I was there, we were able to test the propulsion, the braking, the doors, and all the interaction between those, both, you know, from Alstom and Thales. They both worked actually pretty well.

FRASER HARLAND: So I just wanted to pick up on something you said earlier which was that you were a bit surprised by the delay in revenue service, but you're also speaking now of significant challenges with testing. So can you just explain why you were surprised?

JACQUES BERGERON: Well, I was surprised that the rate of production and retrofit

from Alstom's side has, I'm going to say, slowed down quite a lot after I left, and I don't know why because I wasn't there, but I heard that, you know, there was -- they were still working on Vehicle 31, 32, 33, 34 when they were supposed to be done, you know, while I was there. So I was surprised that they slowed down that much.

FRASER HARLAND: And you're not able to speak to why that happened?

JACQUES BERGERON: I don't know. I wasn't there. I heard it. I was in contact with Mr. Manconi that basically took my position after I left, but that's about it. I don't know what happened truly.

FRASER HARLAND: Can you explain your understanding of the retrofit work that Alstom was doing while you were on the project? What did the retrofit work look like?

JACQUES BERGERON: Yeah, the -- it went fairly good. You know, we developed a plan to use the storage area of the MSF plus the MSF to tackle some modifications.

We had 10, 12 modifications to do. The biggest one was basically the brakes and the doors. I talked to you about the line contactor, which is

kind of an easy modification, but you need the parts, and it seems that the parts were the problem in that case, but -- and then there was the VOBC wire connection, those 40 wires that I was talking about that were kind of long to do.

But, yeah, it was progressing. We had a weekly meeting with Alstom to show the progress, and I'm not going to say it went -- you know, it went without hiccups, but for a modification process and task, it went pretty well when I was there anyway.

FRASER HARLAND: And I understand that at a certain point, OLRTC asked Alstom to divide its retrofits into three categories or three configurations. Do you recall that?

JACQUES BERGERON: Yeah, yeah, yeah, there was -- there was, you know, some that were, you know, absolutely necessary, and those were mostly Thales's ones, those that can affect the trial running, and then after that, the -- I'm going to say the operation, you know, commercial operation, and then after that something that can be done even after the service has begun. So those were the three different categories.

FRASER HARLAND: And you would have

witnessed or been involved mostly in the first category?

JACQUES BERGERON: Yeah, mostly, yes.

FRASER HARLAND: And that was -- you said those were mostly related to the Thales interface?

JACQUES BERGERON: Yeah, Thales and safety-wise, but there was no big safety issues other than, you know, making sure that the VOBCs and Thales work correctly.

The big issue was safety related but not immediately. We could run maybe a couple of years with the braking system that we had without any safety issue, but the rest were mostly -- you know, you had some cosmetic issues and some functionalities that wouldn't -- wouldn't be seen by passengers or the operator at that time.

FRASER HARLAND: Did the -- this retrofit campaign, did it mean that testing was being done on different vehicles in bits and pieces instead of sort of all at once or --

JACQUES BERGERON: Well, when we -- when we test vehicle, we always have three or four different vehicles to test, and we test different things on different vehicles. This is normal

application. And, yes, we did have a vehicle that was dedicated to Thales. We had a few vehicles that were dedicated to Alstom.

So, yeah, it is -- it is normal and those dedication, but they can -- you know, when we say a vehicle, it doesn't mean that it's always going to be the same vehicle as the -- I'm going to say the status of evolution of the vehicle change. We can change vehicle just like, you know, for Thales we started with Vehicle 5, and after that, we moved to Vehicle 11 because it was the most current one especially for braking system related to the brake accuracy stopping that I was mentioning. So, yeah, it is normal that we have quite a lot of vehicles for testing.

FRASER HARLAND: And if some of the interfacing issues had been resolved earlier, could that have minimized the need for retrofits?

JACQUES BERGERON: Of course, of course but, you know, to give you an example -- I don't know if you know the Northeast Corridor high speed train that goes between Boston and New York, Washington.

You know, when we delivered all the -- this is when I was at Bombardier. When we

delivered those vehicles, the complete fleet was delivered, and we still had 250,000 hours of retrofits to do.

And so it is -- yeah, we try to minimize that, but it's -- most of the time it's almost impossible because construction of trains is very custom. Every client wants his own things, his own design, and to fit in a schedule, it's -- it's impossible to do everything before you actually start your true production.

FRASER HARLAND: And on that point of every customer wanting their own designs, was to your -- from your perspective, was there anything in particular demanded by Ottawa that created challenges or particular complexities?

JACQUES BERGERON: No, not really.

FRASER HARLAND: I want to talk a little bit about scheduling. We talked about that in the context of the contracts, but I know that schedules were renegotiated between Thales and Alstom as the project went on. Did you have any involvement in that process?

JACQUES BERGERON: No, I was the recipient of the changes basically, but I didn't really negotiate whatever Alstom and Thales was

actually doing, but, yes, we had a lot of -- a lot of revision on the original schedule.

FRASER HARLAND: So were you expected to try and work with the parties to meet those schedules, or what was the impact of the schedules on your work?

JACQUES BERGERON: Basically they didn't -- it didn't impact the work that I had done or to do basically, but, you know, when we -- when we -- as I explained earlier, when we had a choice to make who's going to -- who's going to do the change on their side, I was more concerned about the functionality and then the schedule and then, you know, cost and suggested to who's going to have to change on either side.

But, yeah, a schedule change, you live with it. You -- how do you say that? You are -- you are affected by it, but there's nothing much you can do as opposed to keep on moving forward.

Is that unusual? No. On every project that I've seen, I've seen lots of changes and lots of schedule changes, and it's quite -- it's quite normal on projects like this.

FRASER HARLAND: Do you know who was responsible on OLRT's side for negotiating the

schedules with Alstom and Thales?

JACQUES BERGERON: Yeah, it was mostly, like I said, Alex Turner that was there as far as the program manager, and I'm sure that they negotiated that.

Most of the time, I have to say that, you know, the schedules arrive. They're not negotiable. It's basically -- excuse the French, but when we have a change in schedule, it's a fait accompli and, you know, you come to the point that you cannot, you know, catch up whatever problems that you have, and it's -- it comes as a fait accompli.

So as an example, you know, Alstom had two major problems. During the beginning of the manufacturing was with the roof extrusions that were done in Sweden, and the other one was the bogie casting that was a new supplier in the United States.

And, you know, in both of those cases, there was tooling issue in Sweden, and there was -- how do you say that? Casting issues. You have porosity in the casting in the United States, so design -- change in design needed to happen to make the product correct and homogenous.

So that -- there's nothing you can really do more than, you know, proceed as fast as you can to those changes and change in tooling to produce the parts that you need.

So it's -- most of the time it's a fait accompli of whatever is going to happen.

FRASER HARLAND: I understand that there was -- with Alstom, there was a renegotiation of the schedule up to a Version 5 schedule, and then OLRTC refused to renegotiate the schedule further and was trying to hold Alstom to the revenue service date in the subcontract. Do you have any --

JACQUES BERGERON: I -- yes, I know of it. I know that, you know, OLRT tried to hold Alstom to schedule, you know, Revision 5, but, you know, I've seen -- there's a 9. So, you know, how it turned out to be, they tried to force Alstom to fix it. I didn't -- I didn't have anything to say about it, about the strategy towards that, but, you know, I've seen Revision 9 of the schedule, so...

FRASER HARLAND: And I also understand that there was an extension granted to Thales in terms of revenue service availability. So do you have any idea why --

JACQUES BERGERON: No, I don't. On this one, I don't -- you know, we had -- we had all the equipment from Thales. It was all ready to be installed, so it was in our warehouse. And I don't know about negotiation to extend Thales contract. That I really don't know.

FRASER HARLAND: Okay. Ultimately, the revenue service date of May 2018 was missed, of course; correct?

JACQUES BERGERON: Yeah, correct.

FRASER HARLAND: Do you have -- for you, you know, why did that happen? What was -- what was the issue?

JACQUES BERGERON: Well, my -- the main issue was, like I said, the track availability. You know, we had -- we had some issues in the tunnels. We had two sinkholes. The -- basically the track -- I could see track construction on the west side of the city, on the east side of the city, but at one point the tunnel became a critical path, and we couldn't -- we couldn't complete the two and connect the track through the tunnel. So, you know, the main, main reason was the track availability.

FRASER HARLAND: And did you have any

sense that the contract with Thales and the contract with Alstom were being managed very separately and not coordinated? Do you have any knowledge of that?

JACQUES BERGERON: No. I always felt that those two were basically joined at the hip, if I can express myself that way. So they don't -- they -- you know, we had -- we had the vehicle at the right time to put the VOBCs on and vice versa and have all the equipment on it. You know, all -- I don't see any issue there to be frank with you.

FRASER HARLAND: Okay.

JACQUES BERGERON: Schedule-wise that means.

FRASER HARLAND: And on the commercial side, did you have any role in determining whether or not variations would be approved or that kind of thing?

JACQUES BERGERON: Well, I had very limited influence on this. There was -- they're going to ask me my opinion, and in the -- you know, like I said, the double-cut issue and the 40 wires that needs to be added to the vehicle, of course Alstom, you know, ask us to pay for this, but to my point, it was their interpretation of the

Alstom-Thales ICD, and it was not anybody's fault other than Alstom, but that was about the extent of my participation to the variation order.

FRASER HARLAND: Okay. If we can speak now a bit about training to the extent that you were involved. Did you have any involvement with the training for the use of the VOBC system by --

JACQUES BERGERON: No, not at all. The training -- training was handled by someone else. And, you know, the whole training on the VOBC, on the vehicle, on the operations, training for the OC Transpo drivers, I was completely removed from that.

FRASER HARLAND: Okay. How would you say that the trains were performing at the time that you left the project?

JACQUES BERGERON: I think they were performing very well within the -- within the confines of the specification. Of course we test and always -- basically I tested and approved for trial running all the vehicles that came out of production, and I, you know, tested every single one of them and make sure that propulsion, braking, doors -- I didn't test the air conditioning because that was a series test that Alstom do.

But they presented me with the results of the series tests that were done on all the vehicles, and actually the performance was as per specified, and I signed on it on the car exterior book as well.

FRASER HARLAND: So you said you left the project in August of 2018; is that -- that's right?

JACQUES BERGERON: Yeah, the 31st of August 2018.

FRASER HARLAND: And was there a change in other key management or leadership of OLRT around the same time?

JACQUES BERGERON: Oh, boy. Now you ask -- I -- at that time, it was -- we had a few directors, but when I left, I think it was pretty stable, but, you know, we were at the end of the project, and the office on Carling street was about to get basically closed, and everything was transferred to the Bayview project or at the MSF, but management-wise, I don't -- I don't recall a big change in that direction.

FRASER HARLAND: Okay. So you don't recall a new project director or new management in --

JACQUES BERGERON: I know that, you know, Matthew Slade moved in, but that was after I left, and I don't -- I don't know what are the circumstances that arise to that.

FRASER HARLAND: Okay. So your -- what led to your departure from the project?

JACQUES BERGERON: Retirement.

FRASER HARLAND: Okay. Was there anything else about what was going on at the project at the time or --

JACQUES BERGERON: No. I -- when I joined, my contract with SNC was running until the 30th of June 2018. And my primary residence is in the South of Shore Montreal. So I was travelling Sunday night and Friday evening back to Montreal every weekend, and, you know, my wife agrees to that for a certain period of time for the contract time.

And when the time arrived, we hadn't finished testing at least to my satisfaction, I would say, and OLRT asked me if I could stay another three months until they find, you know, somebody to success to me.

And I agreed to extend that to the end of August with my wife's blessing, but that was

about the extent of the -- you know, the reason why I left the contract.

It's not because it was not going well. And I kept on -- in contact with Joe Manconi and the engineering group thereafter when they needed some information, some history and so on and so forth. So I stayed very cooperative, but I had to return home.

ANTHONY IMBESI: And you had said that your contract was till the end of May 2018. Was it the intention from the outset that you would be on board until following revenue service availability?

JACQUES BERGERON: Yeah. Well, you know, it was the 30th of June, not May but June, and, you know, at that time it was planned that, you know, we would be in revenue service, but, you know, it's a time as well that, you know, being four and a half years away from home. It was deemed to be, you know, correct but pushing the envelope a little bit.

FRASER HARLAND: Do you recall OLRT subcontracting any part of systems integration to any party? You had mentioned that SNC was responsible for it, but do you recall it being anyone else coming in as a subcontractor to assist

with systems integration?

JACQUES BERGERON: Design-wise, no. I know that the -- I don't remember the name of the firm that joined us in late 2017 to redo the functional analysis of the entire system, but that was -- that was not my decision or I don't know where that came from, but we didn't -- we didn't stop contract design phase, that's for sure.

FRASER HARLAND: So a company came in to do what exactly you mentioned?

JACQUES BERGERON: Well, to make sure that the functional analysis was done and that the system was safe to operate.

FRASER HARLAND: Do you know if this was SEMP?

JACQUES BERGERON: Yeah, that was SEMP. You're right.

FRASER HARLAND: Okay.

JACQUES BERGERON: I don't know why. By the way, this -- you know, this decision I wasn't part of. I don't know why, you know, they -- we end up with them. I discuss and participate with their project, but I actually don't know why this happened.

FRASER HARLAND: So you don't know why.

Do you think that they played a useful role or was -- do you have a sense of what they accomplished while they were there?

JACQUES BERGERON: Actually, no, I don't know why they were there. I don't know what was their added value. We didn't make any changes whatsoever. There was no change in design. There was no change in operation. There was no change in procedures. I don't know why basically.

FRASER HARLAND: So this wasn't -- there wasn't any issue of you needed help? Were things not moving along at this time, and something needed to change from your perspective?

JACQUES BERGERON: Not at all. Not at all. Everything was -- you know, when they came in, everything was basically done, designed, sealed. We just had to, you know, true testing, make the adjustment that are needed, but it was after the fact, and basically I didn't need an integration, that's for sure. And actually, you know, it was an extra level of work that I didn't need -- didn't need it at the time.

FRASER HARLAND: I just want to come back to a couple other delay issues. It's my understanding that Alstom had delayed access to the

MSF. Is that anything you recall?

JACQUES BERGERON: Yes. Yes, I do recall that.

FRASER HARLAND: And did that have an impact on the interfacing or on --

JACQUES BERGERON: It didn't have any impact on the interfacing. It just had impact on the manufacturing.

FRASER HARLAND: Manufacturing. What's your view of the capability of the MSF for what it needed to do in terms of train construction?

JACQUES BERGERON: I think it's not -- the MSF was -- the beauty of Alstom design was that it was a modular design, and they could build it in any facilities around the world. That's how they built it and designed it.

So, yeah, actually it worked fine because the design from Alstom was a modular design and could be assembled with, I'm going to say, minimal tooling. Still quite a lot of it, but they were prepared to do that. So it made it possible because of the design of the Alstom vehicle.

FRASER HARLAND: Okay. And you mentioned the sinkhole generally, but do you have -- were you aware of sort of specific issues

that caused for your work on the project?

JACQUES BERGERON: No, not really, no. I just know that I wanted to test the entire system, but by the time I left, it was not available, so...

ANTHONY IMBESI: In terms of the sinkhole, did that directly, in your view, cause delays to the track availability for testing?

JACQUES BERGERON: Of course that has a direct effect on the availability of the tunnel, completion of the tunnel, track installation, and not only track installation but all the wiring and system connections that we need to have from one end to the other.

FRASER HARLAND: You mentioned briefly the P25 radio as being an issue. Was that -- was that part of your mandate, or was it just something you were aware of that was causing another issue?

JACQUES BERGERON: Well, because I was, you know, kind of an integration and this was a vehicle issue, vehicle/rail related issue, I got -- I got involved in it.

And, you know, with -- the P25 was supplied by Bell, and Bell didn't have any knowledge whatsoever of what mass transit

requirements were. And, you know, before we got to the proper configuration of radio to put, you know, in the dash of the vehicle, it took two years basically from the first time that I required the information to the first interface meeting that we had with Bell to discuss the design of the radio. It took two years.

FRASER HARLAND: Do you have a sense of what caused those delays?

JACQUES BERGERON: I think it's kind of a misunderstanding of what a mass transit system would need. You know, the very first meeting that I had -- and I don't remember his name -- was the guy in charge, a project manager for the P25 for the City of Ottawa.

And I said I need a radio to -- we were already late. That was in 2015. We were already late according to, you know, the contract that Alstom has demanded that, you know, all those interfaces can be frozen by April 2014.

And I said I desperately need the radio, and the person just put the radio on the table, said this is what you have -- because we had to buy it. This is what you have to buy.

You know, it doesn't suit our need

because you have, you know, dangling wire and -- how do you say that? The microphone that are standing in front of the radio, and they're going to impend on the operation of the train because we have a lot of, I'm going to say, controls on the dash, and you don't want to have hanging wires in front of those controls especially, you know, track brakes and horn and those type of stuff.

I say, well, this is the way it is, and you have to deal with it. Said I cannot deal with it the way it is. It's not safe to install that in the vehicle, so we need to discuss with Bell. Then by the time that all that was solved, it was basically May of 2017.

FRASER HARLAND: We've spoken a bit about this already, but just so I understand, your role, of course, was focused largely on the Alstom-Thales interface, but there were many other systems to interface with.

So was there -- who was responsible for sort of the overall integration of the system?

JACQUES BERGERON: Well, basically, you know, SNC group on the system side, which was a subcontract of OLRT to the design issue to SNC-Lavalin engineering. They were the overall

responsible for the entire systems integration.

FRASER HARLAND: Okay. And were you liaising with them, or was there sort of a --

JACQUES BERGERON: Of course. Of course I was. Of course I was.

ANTHONY IMBESI: Do you recall -- do you recall there being any form of dispute as between OLRTC and the engineering joint venture as to who was responsible for the overall integration of the systems, particularly the rolling stock system and the signalling system?

JACQUES BERGERON: I do recall that there was an argument about who's going to do that, but, you know, I'm going to phrase it very simple. SNC-Lavalin, the -- what was the exact term you just mentioned, Mr. Imbesi?

ANTHONY IMBESI: I had referred to the -- well, OLRTC on one hand and then the engineering joint venture.

JACQUES BERGERON: Yeah, the engineering joint venture, okay. They say that they didn't have anything to do with Alstom or Thales as far as integration.

And I said, Well, I'm sorry but you do because, first of all, you need to interface the

tunnel to the size of the vehicle, and that's an integration.

And, you know, it was kind of stupid, but, you know, you have to provide the proper power distribution to those vehicles, and you have to provide the proper wiring so we can communicate the antennas, because the VOBC is a radio-based control system, and you have to provide the medium so we can communicate with those antennas and so on and so forth.

So, you know, that was kind of a bold claim. I don't know where it came from. I think it mostly came from Hatch, but I'm not sure. But, you know, at the end, that -- I let them deal, administratively speaking, on this side, but, yes, we did have a lot of exchange and, yes, they did provide interface with Thales and Alstom when needed. They couldn't do otherwise.

FRASER HARLAND: Do you recall any change in the integration standards that were being used during your time on the project?

JACQUES BERGERON: I don't understand what you mean by "integration standards." What do you have in mind?

FRASER HARLAND: Anthony, can you help

me out on that point there? I think there was a --

ANTHONY IMBESI: Yes. So, I mean, we had heard a suggestion that perhaps the integration standards changed somewhere in and around 2018 from an approach that was used primarily in the U.S. to a European approach called EN50126.

Do you have any knowledge about any change in the standards to which the integration was being measured against?

JACQUES BERGERON: No, that was -- in my knowledge, the EN regulation was always there. I mean, that's the one that I use between Alstom and Thales and the rest of the system even, the SCADA system. So I don't recall that this was a change. From SNC it might have been, but from my side, it wasn't.

ANTHONY IMBESI: Okay. And so you said that throughout the time that you were performing the integration role, you were applying it as against that standard?

JACQUES BERGERON: Yes.

FRASER HARLAND: I'm wondering if you can speak to us a bit about your understanding of the speed profiles that were used in the train. That would have been part of your interfacing work,

I imagine?

JACQUES BERGERON: Of course it was. Yeah, the speed profile was very important because we had a -- we had a time limit to -- in the project to go from, you know, Blair to Tunney's Pasture in 24 minutes. So the speed is quite very important, but most importantly the dwell time at every station was discussed and evaluated.

Of course we started with a forecast of passenger in and out at every station given within the contract by OC Transpo or the City of Ottawa, and, you know, we had to build the system so we can meet with those dwell times. We can meet 24 minutes from one end to the other.

So the speed profile is controlled by Thales basically, and so we have to have the proper braking capacity and proper acceleration capacity to meet it, which we did actually.

FRASER HARLAND: And was there any -- was there an ability to modify the speed based on track conditions?

JACQUES BERGERON: There's always possibility to change it. Those are -- those are, you know, coordinates that you can put in programs, but once you're in, I don't -- you know, I don't

see the need for it other than if you -- if you want to add, I don't know, more cars.

The most important point on an automated system is the headway for the guaranteed brake rates. You cannot get too close to any other train more than, you know, the capacity under -- how do you say that? Not the full capacity but degraded mode capacity, that you have the distance to brake if anything should happen.

So this is about the only reason that I would say that you could change the speed profile of the system, if you add vehicles into the system affecting the dwell time and therefore affecting the guaranteed brake rates. So that's about the only reason I would see to do that.

FRASER HARLAND: Because -- it may have been after your time. I think it was, but there was a wheel flat issue that arose, and I think there's some suggestion that the reason that was happening is that there was a significant amount of emergency braking in -- when the track was slippery or in particularly inclement weather, and maybe that could have been mitigated by adjusting the speed profile. Is that -- does that make sense to you or can you --

JACQUES BERGERON: That makes -- that makes a lot of sense. The problem is every authorities, you know, at least in North America and Europe have the leaf season. You know, when the leaves falls on the track, it creates an oily and mis-contacts, and everybody has to adjust their operation for that season.

When the leaves falls and it rains, it creates -- because the leaves left -- leave kind of an oily residue on the track, and it affects the adherence of the wheel-rail interface, so it is something that needs to be addressed.

However, I do remember that we did have a braking issue as far as the braking loop communication between the vehicle and Thales, and that was -- that was something that happened sporadically. It was not all the time.

But, yes, at one point, we did generate a lot of flats. And the quality of the track, I have to say that when I left, it was still very rusty.

I mean, you have to understand that by contract, we had to have the track delivered to the site by July of 2015. So by the time they were used in '17, '18, there was a lot of what we call

not rust but scale on top of the rail, which is not really good for the wheel-rail interface.

FRASER HARLAND: So just to follow up on a couple things you said, there were -- you said you were generating wheel flats. That was happening while you were still on the project?

JACQUES BERGERON: Yes. Yes.

FRASER HARLAND: So that was during the testing phase then, I guess?

JACQUES BERGERON: Yes, it was.

FRASER HARLAND: Okay. And what was the cause of that, as far as you understand?

JACQUES BERGERON: Well, there was a lot of -- there was a lot of cars on it. We had to clean the tracks first of all because we did -- we did -- originally, we used the track brakes of the vehicle to clean the track to make sure that the scale was out of it.

And then there was an Alstom algorithm that controls the motor bogies and the trailer bogies to brake, I'm going to say, in a harmonized, efficient manner.

Of course, the motor bogies can brake a little bit harder because they're heavier as opposed to the trailer bogie where there's no

motors on it, therefore a little bit lighter. And that was in the HPU issue.

And from what I understand, even after I left, they -- Alstom still had problem with the hydraulic power unit for the brake system that might have generate yet some more flats.

But I have to understand that, you know, however I'm concerned about the flats, it's not a safety issue because now you're braking to more than your capacity really. So it's on the safe side.

FRASER HARLAND: And in the simplest of terms, though, like, how do you -- what's the -- how are wheel flats caused by particular types of braking? If you can just explain that as simply as possible to me.

JACQUES BERGERON: Well, basically you apply too much brake pressure on your -- on your caliper for the friction that you have between the wheels and the rail.

So, you know, the normal, I'm going to say, friction coefficient between wheel and rail is between .025 to .05 of U coefficient. As an example, if you take a tire on the asphalt, that coefficient will be .8.

So you see that the beauty of the train is that it has very low friction that impedes its movement, so it's very efficient electrically, I mean, energy speaking, but when it comes to braking, you have to control this force on -- you know, to stop the wheel so you don't go over the friction coefficient that you have available to you.

FRASER HARLAND: In your view, though, flats doesn't pose a safety issue?

JACQUES BERGERON: No, not really.

FRASER HARLAND: So is it more of a comfort issue or what -- like, what is the issue with --

JACQUES BERGERON: It is a comfort, and it is a maintenance issue, and it is a noise issue. But, you know, everybody, every authority around the world has to deal with flat spots.

I mean, you see it, and if you have a freight line near your house or wherever, if you stand by and you're going to, you know, hear a freight train pass and you're going to hear that boom, boom, boom, boom, boom, boom noise.

Every train has flats on it because however very efficient, you know, the adhesion --

the lower adhesion it is, the control of the braking system is very, very touchy.

FRASER HARLAND: Okay. I think I've essentially come to the end of my questions. I did want to give you an opportunity, Mr. Bergeron, to tell us anything important that you think is good for the Commission to know that we may not have touched on. I don't know if there's anything that comes to mind for you.

JACQUES BERGERON: No, not really. The only thing I can say is that, you know, the project -- after 18 projects and 6, you know, fully automated ones, the project went basically the same as all the other project that I was work on.

You know, the lateness and the hiccups and the contractual issues between partners, those are kind of normal. If it's not one thing, it's another.

And, you know, I think, you know, dealing with Ottawa was one of the best project that I worked on really as far as communication, interfaces, and so the overall status of the project and the cooperation with everybody was one of the best that I worked on, and it was -- it was really, really nice to have it.

And I think we have a good product and as opposed to a car that you kind of -- vehicle, an automobile that you roll off the lot from a dealership and you say that you're going to have three, four years of, you know, maintenance-free problem, free running, mass transit is completely the opposite because of their custom side.

The first three, four years are going to be somewhat painful, and then after that, you're going to see the reliability, the availability climb. And this is the name of the game. Every project goes through the same phase, so it's not unusual. It's the -- it's the nature of the business.

FRASER HARLAND: Thank you for that.

Anthony, were there any final questions that you had for Mr. Bergeron?

ANTHONY IMBESI: Just a few questions for you, sir. Just to follow up on what we were talking about about the braking issues, do you recall whether Alstom raised any issues with you or with OLRTC regarding how the speed profiles might impact the performance of their trains?

JACQUES BERGERON: Not that I recall really. Not when I was there anyway.

ANTHONY IMBESI: Okay. So there would have been nothing raised about the winter speed profiles in particular?

JACQUES BERGERON: No, that -- I never heard that to be frank with you.

ANTHONY IMBESI: Okay. And just one follow-up question: Are you aware, was any value engineering done to the trains or anything to do with the rolling stock in order to meet schedule?

JACQUES BERGERON: I don't think so to be frank with you. Never heard of any value engineering done to meet schedule on the vehicle side.

ANTHONY IMBESI: Thank you. Those are the questions that I had.

JACQUES BERGERON: Okay.

FRASER HARLAND: Mr. Chowdhury or Mr. Killey, did you have any follow-up for the witness?

JEAN-CLAUDE KILLEY: Could you maybe give us just two minutes to caucus about that?

FRASER HARLAND: Yeah, that's fine.

JEAN-CLAUDE KILLEY: So we'll just go cameras off and call each other and come back into the Zoom.

FRASER HARLAND: Sure.

ANTHONY IMBESI: So perhaps we'll go off the record. Take a few minutes.

-- OFF THE RECORD DISCUSSION --

JEAN-CLAUDE KILLEY: We don't have anything. We're done.

FRASER HARLAND: Well, thank you to everyone and particularly Mr. Bergeron for your time today.

JACQUES BERGERON: No problem.

FRASER HARLAND: It's most appreciated. Thanks to everyone.

Madam Court Reporter, we will send you the one exhibit, and I hope everyone has a good day.

JACQUES BERGERON: Okay. Thank you very much everybody.

-- Adjourned at 12:01 p.m.

REPORTER'S CERTIFICATE

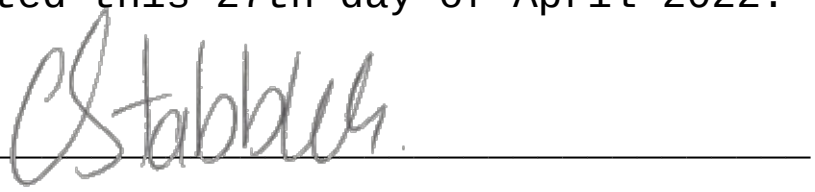
I, CARISSA STABBLER, Registered Professional Reporter, certify;

That the foregoing proceedings were held remotely via Zoom videoconference at the time therein set forth, at which time the witness was put under oath by me;

That the testimony of the witness and all objections made at the time of the examination were recorded stenographically by me and were thereafter transcribed;

That the foregoing is a true and correct transcript of my shorthand notes so taken.

Dated this 27th day of April 2022.



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