Ottawa Light Rail Commission

NADIA ZAARI
on Wednesday, April 13, 2022

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OTTAWA LIGHT RAIL COMMISSION MEETING

ALSTOM TRANSPORT CANADA INC.

NADIA ZAARI

APRIL 13, 2022

--- Held via Zoom Videoconferencing, with all participants attending remotely, on the 13th day of April, 2022, 1:00 p.m. to 3:32 p.m.

COMMISSION COUNSEL:

Christine Mainville, Co-Lead Counsel Member
Fraser Harland, Commission Counsel Member

PARTICIPANTS:

Nadia Zaari,
Michael Valo, Esq. & Charles Powell, Esq.,
Glaholt Bowels LLP - Counsel for Nadia Zaari

ALSO PRESENT:

Carissa Stabbler, Stenographer/Transcriptionist
Chandani Joshi, Virtual Technician

I N D E X

WITNESS: NADIA ZAARI

-- Upon commencing at 1:05 p.m. --

NADIA ZAARI: AFFIRMED.

FRASER HARLAND: The purpose of today's interview is to obtain your evidence under oath or solemn declaration for use of the Commission's public hearings. This will be a collaborative interview, such that my co-counsel, Ms. Mainville, may intervene to ask certain questions. And if time permits, your counsel may also ask follow-up questions at the end of the interview.

The 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.

And 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.

And 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 Ontario 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.

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, Ms. Zaari, if we can just begin today by having you describe your role with Phase 1 of the Ottawa LRT project, please.

NADIA ZAARI: And, I'm sorry, you got cut off. Can you please repeat the question one more time?

FRASER HARLAND: Yeah, no problem. I just wanted you to describe your role with the Ottawa LRT project, Phase 1 in particular.

NADIA ZAARI: Okay. So I was involved in the Ottawa LRT project from December 2013 until September 2016 where I held two roles. My first role was in a capacity of deputy project manager, and then I moved on to the role of project manager for Alstom.

FRASER HARLAND: And what were the approximate time frames of being deputy project manager and project manager?

NADIA ZAARI: So from memory, it was from December 2013 up until, I would say, June or July 2015, deputy project manager.

FRASER HARLAND: And then from June or July 2015 until September 2016 as project manager; is that right?

NADIA ZAARI: That is correct.

FRASER HARLAND: Can you describe in general terms the role of a deputy project manager?

NADIA ZAARI: So as a deputy project

manager, I was assisting the project manager in all the internal activity, which means I had no interface to the customer or LRT.

I had transferred from France on to our U.S. site to assist with the transfer of technology into our U.S. site and assisting in the start-up of the manufacturing of the first train in the U.S.

FRASER HARLAND: Okay. And the U.S. site was in Hornell, New York; is that right?

NADIA ZAARI: That is correct.

FRASER HARLAND: Then could you describe the role of a project manager?

NADIA ZAARI: So a project manager role has more front-facing role and to the customer. Essentially overseeing the project execution and interacting with the customer, which was OLRTC.

FRASER HARLAND: Okay. Where were you based for this work? It sounds like for the deputy project manager work, you were based in New York. Did you stay in New York as project manager, or was that in Ottawa?

NADIA ZAARI: That is correct. I stayed in New York because we had parallel activity both in the site of Hornell in New York. So I was commuting. Three days in Ottawa, two days in

New York. I personally stayed on the U.S. soil.

FRASER HARLAND: Okay. You finished in September 2016. Are you still an employee of Alstom, or have you moved to a different company?

NADIA ZAARI: I am still an employee of Alstom in the U.S.

FRASER HARLAND: Okay. And working on different projects, I presume, since September of 2016?

NADIA ZAARI: Absolutely. Completely different project non-related to Ottawa project.

FRASER HARLAND: Okay. Did you have any involvement with the procurement phase of the project?

NADIA ZAARI: Yes, early on, we had a sourcing team involved in the procurement, and I was participating to that as part of a deputy project manager role.

FRASER HARLAND: Okay. But, sorry -- but you weren't involved in, I guess, the City's procurement of the LRT at that early stage?

NADIA ZAARI: No, I was not. Sorry, yeah, I misunderstood your question.

FRASER HARLAND: No, that's just fine. You didn't have any involvement in the negotiation

of the subcontract, Alstom's subcontract with OLRTC; is that right?

NADIA ZAARI: No, I was not. I arrived on the project, the contract was already executed and already a few months into the work.

FRASER HARLAND: Okay. Thanks. And before moving on, can you just briefly describe your experience, your educational experience and then your experience with Alstom.

NADIA ZAARI: Yes. So I am an engineer by trade. I joined Alstom a little bit more than 15 years ago. I started in our headquarters, have done various role into project management as well as customer-facing role, such as customer director role.

One of my most significant experience back in France was when I was a project manager for light rail vehicle project for the City of Reims where I -- managing a scope for the signalling portion of the project.

And then I transferred in the U.S. about in December 2013 just to bring also my expertise and my knowledge and supporting the transfer of technology between our design centre and the manufacturing site in the U.S.

FRASER HARLAND: Thank you. So I just want to speak briefly about the subcontract. As part of your role, particularly as project manager, did you review Alstom's subcontract with OLRTC?

NADIA ZAARI: Yes, I did. It was the first document we're obligated to read when we join the project.

FRASER HARLAND: Okay. And the main deliverable under that subcontract was the design construction testing delivery of 34 LRVs; is that correct?

NADIA ZAARI: That is correct.

FRASER HARLAND: The subcontract also set the schedule that Alstom was to abide by and the main milestones; is that right?

NADIA ZAARI: That's correct. There was an appendix for that.

FRASER HARLAND: Okay. We'll come to the schedule a little bit later, but I want to cover a couple other things first.

So the train that was provided for the Ottawa LRT was called the Citadis Spirit; am I right about that?

NADIA ZAARI: That is correct.

FRASER HARLAND: Can you tell me how

this Citadis -- was it based on other models in Europe? Or what was -- how did Alstom come to use this design for the LRT in Ottawa?

NADIA ZAARI: So I will share with you what I know from secondhand. I was not involved in the choice of the name and what it was.

Alstom has a product called the Citadis that has been deployed in many cities in France and other part of the world.

This was -- the Citadis Spirit was the American -- North American version of the Citadis meeting some local requirement. So it was an adaptation of an existing product; hence the second name that was added to it to differentiate.

FRASER HARLAND: So there were, then, specific requirements based on North American standards that Alstom had to meet with this train model; is that right?

NADIA ZAARI: That is correct. And beyond American standards, there was also the length of the train that was a little bit longer. There were some specific related to that specific contract.

FRASER HARLAND: Did those standards pose challenges for Alstom that you're aware of?

NADIA ZAARI: They were standards that the team had to get familiar with, which was done very early on in the project when I joined in. Felt the team had already had a good grasp of those standard, and they had to be incorporated as part of the design. So nothing significant that I can recall from memory. It was back in 2013.

FRASER HARLAND: Were there any particular standards required by the City that you recall causing technical challenges for Alstom?

NADIA ZAARI: So our contract was with OLRT. Didn't really know which was coming from the City, from OLRT, from something else. So I wouldn't be able to tell which one was coming from the City specifically. They were all in our contract with OLRT. We didn't have specific City requirements, specific OLRT. They were all one type of requirement. I wouldn't be able to say if the City ones are more stringent than others because I didn't know.

FRASER HARLAND: So the requirements that OLRTC was requiring, were there any that were new and particularly challenging for Alstom in their design of the Ottawa LRT?

NADIA ZAARI: And I'm doing this from

memory. Some that were challenging was the requirement on the steel that I recall from memory, the type of steel to be used. It was a very old type of standard that we didn't feel was used anymore in the industry. It was a very awkward standard. We didn't feel it was a good requirement, so we went and had a discussion including with the City. And that's the one where I recall being in a meeting with the City and saying, "We have an equivalent. We've used that in our past project. We've been successful, and we think this is what you should specify."

And we managed to reach approval. It took quite a number of years to get to converge, but that was the most specific one. The one about the steel to use for the -- on the frame.

FRASER HARLAND: Okay. I wonder if we can speak a bit about the relocation of manufacturing and testing to Ottawa.

So, originally, according to the subcontract, where were the first two LRVs going to be constructed?

NADIA ZAARI: So the subcontract I don't recall. I recall when I joined in the project, there was an agreement that had been done

in the first month of the project that the first two LRV would be build in Hornell, New York. And LRV 3 to 34 would be build in Ottawa. That was my hypothesis when I started the contract.

FRASER HARLAND: Was there ever, to your knowledge, an earlier plan that the LRVs would be built in the Alstom facility in Valenciennes, France?

NADIA ZAARI: Correct. I have heard about that, but that was prior to my arrival on the project.

FRASER HARLAND: Okay. So once you arrived, the plan was to build the first two LRVs in Hornell?

NADIA ZAARI: Correct.

FRASER HARLAND: Okay. And where were the vehicles ultimately constructed? Was that plan carried out, or what ended up actually happening?

NADIA ZAARI: The plan that ended up happening was only the first LRV was built in Hornell. The second one started in parallel in Ottawa.

FRASER HARLAND: Okay. Can you speak to why that plan changed and what the reasons behind that change might have been?

NADIA ZAARI: When I arrived on the project in 2013, they had been already several months into the project with already some delay related to the designs and the choice to be made very early on in the phase of the project that didn't happen per plan.

So there was already some number of month of delay. Can't recall exactly from memory, but there was some delay.

So the schedule was getting already compressed. Then there was additional delay that tagged on about availability of CBTC design interface that added up to the delay.

It came we were having multiple schedule exchange with OLRT without able to freeze a baseline. So I remember V1, V2, V3. I think we went up to V4.

To the point that it had to change the manufacturing plant to still meet the end milestone. OLRT saw the front moving, but had no interest and no wish to move the end date.

So we had to come with creative idea, and one of them was to start in parallel manufacturing of Train 1 and 2: One in Hornell and two in Ottawa. The decision came very late in the

project. From my recollection, I think 2015 or 2016, so almost two years after I arrived on the project.

FRASER HARLAND: It was at that time that it was decided that that's where this LRV2 would be in Ottawa?

NADIA ZAARI: Yeah. I think there was discussion before, but freezing a baseline of V5 was much later because we had to discuss the test track. The first discussion were probably 2015, and it took probably a year to converge.

FRASER HARLAND: Okay. So I'm going to come back to the V5 schedule, but I just want to stay on the relocation of the manufacturing for a minute.

So how did that decision get made to your understanding? Was that OLRTC's idea? Alstom's idea? How did that decision ultimately get made?

NADIA ZAARI: So Alstom was recording all the delay event that was causing a slip to the right and was -- and I was not the PM early on. So I was just the deputy. So just secondhand information. I have more when I was facing the customer.

But Alstom was recording the delay event about design frozen on time, CBTC interface, choices and design review being delayed, communicating to OLRT and OLRT rejecting schedule, not agreeing with pushing the date because those early delay event were having an impact on the end date, and kept on asking per the subcontract proposal for recovery. We had very often proposed a recovery schedule -- a recovery schedule.

So that was part of the process to propose a recovery as to parallelize more activities and to do Train 1 and 2 in parallel at two different location.

FRASER HARLAND: So, ultimately, it was largely a plan that was designed to save time; is that right? Is that fair? It was all about scheduling?

NADIA ZAARI: It was all about recouping the delay from the front end while not moving the end date.

FRASER HARLAND: Okay. And do you know if this would have had any financial consequences for either Alstom or OLRTC?

NADIA ZAARI: I don't know about OLRTC because I was not getting preview to that -- their

financial. But on Alstom, yes, it had significant financial consequences.

FRASER HARLAND: Can you speak more to that?

NADIA ZAARI: So I'll try illustrate to something that is practical just giving an example.

So, for example, when we decided to start manufacturing of Train 2 in Ottawa, we had already routed all our supplier to deliver the parts for Train 1 and 2 in Hornell, and Train 3 and 4 ongoing onward to Ottawa.

We had very late in the process made that decision, so we had lots of equipment and part sitting in our warehouse in Hornell for Train 2 when they should be in Ottawa. So we had to organize what we call milk run, rent trucks, do daily trucks and ship. And it's a lot of volume of material and parts that had to be sent back.

And some parts were coming from Canada, so they had to send back. So that was a lot of logistic effort due to the late decision.

FRASER HARLAND: Okay. And so there was the manufacturing decision, and related to that, there was also a move of testing, if I understand that.

So where was testing originally planned to be done to your understanding? And I'm talking about validation testing of the first two LRVs here.

NADIA ZAARI: So originally the idea to test -- to validate, I'll use that word, which is more precise for the first two train, was to do a part of the validation in Hornell for whatever could be done in our facility. But then you need an extensive length of track, and this was going to be done in test centre -- U.S. test centre in Colorado. So train had to be shipped over there. We shipped them. We've done that before. Tested over there where we had an extensive length of track to do the testing.

FRASER HARLAND: What actually ended up happening for validation testing? I understand that there was no testing done in Colorado; is that right?

NADIA ZAARI: That is correct. As part of the V5 discussion, there was, again, an idea to save -- save time or limit the impact of the early delay by doing testing in Ottawa and saving on the shipment of the vehicle. So that was part of the discussion, and that's how V5 came up with the

vehicle validation in Ottawa and not shipping the vehicle elsewhere and saving shipping time.

FRASER HARLAND: Okay. And did you support these decisions around relocation of manufacturing and testing? Did they seem like a good idea to you at the time?

NADIA ZAARI: I'm thinking back from behind -- there were a change of plan. So a change of plan so late in the game didn't feel like a good idea, but didn't feel there was any other better idea at this time to meet the date that OLRT didn't want to change because of some triggering event that were -- they had and that they were key for them. So there was no flexibility in impacting those triggering events. So we had to come up with very creative ideas. I'll call them like that.

FRASER HARLAND: Okay. So you've mentioned the negotiation of a new baseline schedule, so I'd like to talk about that a little bit more. So there was -- sorry, before I do that, I'm just seeing my co-counsel here.

Christine, did you have -- no? Okay.

So the vehicle assembly went through -- the vehicle assembly schedule, excuse me, went through multiple versions from V0 to V5. Do I have

that right?

NADIA ZAARI: That is correct.

FRASER HARLAND: Okay. What was your involvement in the negotiations of those schedules?

NADIA ZAARI: I was directly involved, I think, starting V3 from memory. V0, V1 were early on in the project. I was not there. So I think I picked up at V3, V4, and V5 was definitely me.

FRASER HARLAND: Okay. And you've touched on this a bit already, but can you explain again why the schedule was needing to be changed at this time?

NADIA ZAARI: There had been multiple early on delay on the project when I arrived. I was made aware already some delay and the design freeze with the City, the choice in terms of design and style of the vehicle. We call it design and style is the overall look of the vehicle, how many handrails you want inside, and all those design and style element that were supposed to be frozen very early on and that were not and took several months later to get a frozen design and style.

And another delay was the delay in the interface with the CBTC system that was not under

Alstom's scope of work was to be provided by another party. And this interface was not available as planned for the subcontract.

FRASER HARLAND: Okay. That other part is Thales; right?

NADIA ZAARI: That is correct.

FRASER HARLAND: I'll come to that interface, but to stay on the schedule, so the V5 ended up having numerous different deadlines from what had been foreseen when the subcontract was negotiated; is that right?

NADIA ZAARI: That is correct.

FRASER HARLAND: Okay. But you're saying the revenue service deadline didn't change in V5? Did that stay the same?

NADIA ZAARI: Stayed the same. OLRT, despite our multiple request to move it to the right, was not willing to entertain any move to the right. There was a milestone -- from memory I say 9 or 10. Every time we tried to say, "Hey, this will move, this will move." There was no way to entertain a discussion there. It had to stay the same.

FRASER HARLAND: So Alstom's perspective is the reason RSA date didn't change at

this time was because OLRTC was unwilling to make that change. Is that --

NADIA ZAARI: And when we say they were unwilling, there was probably other things involving other parties there. It was not maybe OLRT. I don't know. We were just discussing with OLRT. We were not getting -- privy to other discussion that OLRT were having with other partners and other things going on.

FRASER HARLAND: So what did Alstom have to do, then, to accelerate the schedule so that the RSA date would still be achievable if it -- if it could move? And I guess the relocation of manufacturing and testing is part of that, but what other things?

NADIA ZAARI: Yes. And I will explain in terms, but if it's too technical, please let me know.

So the Vehicle 1 and 2 were built with a certain gap between the start of the 1 and the start of the 2. They were not fully in parallel. There was some overlap. But at least we -- this is typical in a build of a vehicle -- that we ramp up. We validate the design, the assembly, and so that we don't reproduce the same issues on the second

one. So this is typical standard of our vehicle schedule. It's called a learning curve to go through.

And once the two were done, we would start validation. And then only after that number 3 would start. So which would give enough time to incorporate all the return of experience of building two trains before starting Train 3.

Because of the early delay, the start of Vehicle 1 and 2 started much later, so we didn't have that ability to reinject the return of experience of building Vehicle 1 and 2 into Vehicle 3. They just went in series right away.

So what we did to facilitate the ramp-up in Ottawa is that we decided to do an early relocation to Ottawa and start building train earlier than initially planned, which required OLRT to make the building available earlier than originally planned, required us to install tooling, duplicate tooling, and do earlier to recover the early delays.

FRASER HARLAND: Okay. And so I guess, I mean, it would be fair to say that this schedule was compressed and would have removed any what we could call float in the schedule that there might

have been before; is that fair?

NADIA ZAARI: I don't recall when I joined the project to say, "Hey, there is float in the schedule."

FRASER HARLAND: Okay.

NADIA ZAARI: I recall joining the project, looking at the schedule, and saying, "Okay, it's a good schedule." But nothing out of the ordinary.

But then the early delay in the early phase of the project created a negative float.

FRASER HARLAND: Understood. And so, I mean, realistically, did Alstom think that the RSA date was achievable at this time?

NADIA ZAARI: At the time of subcontract signature?

FRASER HARLAND: No, sorry, at the time of the V5 schedule.

NADIA ZAARI: It presented a lot of risks that we shared with OLRT, and there was a common agreement that we're going to make it happen together as long as every party do their own part.

We have our part to build the vehicle, you have your part to make the MSF available, the test track. You have your part to make CBTC

equipment available. So each party had their own part to do to make the schedule a success.

FRASER HARLAND: Okay. And just to close out on the V5, who was your primary counterpart in contract negotiation on the OLRT side in the negotiation? Do you recall?

NADIA ZAARI: I have -- I draw a blank. I might need some help.

FRASER HARLAND: If I say Alex Turner, is that --

NADIA ZAARI: Yes, him. Correct. Sorry. I drew a blank.

FRASER HARLAND: That's fine. Did you have any interaction with Dr. Sharon Oakley (ph) when you were negotiating the schedule, do you recall, or it was all with Alex Turner?

NADIA ZAARI: No, I think she -- she came in after I left.

FRASER HARLAND: Okay.

CHRISTINE MAINVILLE: Could I just jump in, Fraser?

You indicated, Ms. Zaari, that the assembly of LRV3 and the rest of the fleet began earlier than was initially scheduled. Did I understand you correctly on that?

NADIA ZAARI: So the LRV build in Ottawa started earlier than initially scheduled.

CHRISTINE MAINVILLE: And why would that be? If there's been delay, how could it start earlier?

NADIA ZAARI: Because LRV2 was supposed to start in Hornell, so what we said is instead of starting it in Hornell, start it in Ottawa. That way we do the learning curve in Ottawa earlier. We don't wait until LRV3.

So the fact that it changed location of manufacturing site made it an earlier start in Ottawa.

CHRISTINE MAINVILLE: I see. So it's just that assembly started earlier in Ottawa than planned, at least when the plan was to build the two first LRVs in Hornell. But it's not the case that LRV3 started to get built earlier?

NADIA ZAARI: Correct.

CHRISTINE MAINVILLE: It's just that -- okay. So it's just because LRV2 was instead built in Ottawa that production model began earlier?

NADIA ZAARI: That is correct. So the first LRV that we started building in Ottawa was 2 instead of 3, and that made it earlier because of

that.

CHRISTINE MAINVILLE: Right. Okay. I think this is where my colleague is going, so I'll let him take over, but can you speak, then, to when that decision is made, to start earlier in Ottawa, what the state of the MSF is and whether there were delays at that point in the availability of the MSF for that production.

NADIA ZAARI: Yes. So in order to start building an LRV in Ottawa, there needed to be some pre-activity done.

One of them was the building needed to be hand over to us by a certain date so we can go and install our tooling, our office space, and settle before we can put manpower to assemble a vehicle. There was a date by which this was going to be done.

Initially, we were going to transfer all of our tooling from Hornell up into this new manufacturing site to install. But because we were doing the build in parallel, we did launch the duplication of tooling, and so we spent extra effort to build those sets of tooling and install it in Ottawa.

When we were handed over the MSF, it

was not in the shape that we expected. It was not in a shape that is suitable for vehicle assembly. It was still very much a construction site and made our start-up very difficult.

FRASER HARLAND: And you had mentioned -- so OLRTC agreed in the V5 schedule to move up the timeline that they would have the MSF ready for you? Is that what you had said?

NADIA ZAARI: Correct.

FRASER HARLAND: Okay. And you're saying that wasn't -- that didn't ultimately happen? Is that --

NADIA ZAARI: So I think devil is in the detail in what readiness means. Readiness for a construction company probably means I have walls, a roof, and a door, and a lock.

Readiness for us to assemble had a lot more than that. We had some requirement listed in the subcontract of what needed to be available. And obviously we cannot assemble a vehicle in the construction area.

And then we had other expectation that our team would not be wearing hard hat on our premises because it was an area fenced for Alstom to assemble the vehicle.

And there were just all those little details that add up that made it more a construction site than actually vehicle assembly. It was called the, I remember, FVA, final vehicle assembly area.

FRASER HARLAND: So do you recall when under the V5 it was supposed to be ready for Alstom to begin?

NADIA ZAARI: I'm not 100 percent sure. I'm doing from memory, but I think it was July 2015. I would need somebody to check.

FRASER HARLAND: Okay. That's fine. What was the delay? When was it actually in the shape that you would have expected to do the train builds?

NADIA ZAARI: I think in our V5, we recognized that the train -- the area was not really in a shape before, I think, October of 2015, so probably four months later, around that amount of month. I'm doing that by memory of course.

FRASER HARLAND: So what were the implications for Alstom of this unexpected delay in the MSF?

NADIA ZAARI: So the ramp-up was very slow. The -- what we call the takt time at which

we move the parts of the vehicle into the next station was slower.

We had challenges with, you know, storing the parts. Our warehouse was not really suited. We were accumulating a lot of dust from the construction. And so we spent a lot of time making sure the dust doesn't get in the way for assembling the vehicle.

We were having just basic logistic things where we had an area that was not secured. We had people walking by the street and coming, peeking in. And we're like, we can't have that happen if there's an accident.

So we had a lot of little details that we recorded along the line to have it fixed. We didn't have some of the area available until several months later. There was testing area. There was a water station area. There was a storage area.

So instead of getting all the area at once, we got it piecemeal.

FRASER HARLAND: And were you aware that the MSF was delayed, or did this come as a surprise? How did that --

NADIA ZAARI: So it came as a surprise

and not because we were having a team coming visit Ottawa and seeing the progress on a regular basis, where is it at.

Now, given it's construction, in the construction world, sometimes you just put 500 people, and you can go very fast within a week. So we were surprised at the stage at where it was. I remember doing a visit in, I think, in May, in the spring, May or June, and we're like, "Oh, that's not going to be ready in July." But it's construction, so sometimes things can go very fast.

Where we really had issue and we realized it was going to be probably longer is we delivered our duplicated tooling, and the tooling was stored outside and was not moving in for weeks to the point that we had to take it back and go and store it elsewhere until the place was ready to receive our tooling.

FRASER HARLAND: Was there ever any consideration of continuing construction in Hornell given that the MSF wasn't ready? Was that a possibility?

NADIA ZAARI: It was way too late in the process, so we never just -- I mean, I don't recall entertaining any idea like that.

FRASER HARLAND: It was too late just because too many things had happened in terms of assuming it was going to be at the MSF? Is that what you mean?

NADIA ZAARI: Correct. And there's a whole logistic that goes underneath. There's more than 2,500 parts on a vehicle, separate parts. There's a lot of logistics in terms of supply chain, quality inspection.

And once we had set up in our system to reroute the parts in Ottawa, and it was all done, and our vendors were informed delivery and all this, it's very difficult to go back.

FRASER HARLAND: Okay. And I understand that in around January 2016, a site manager was appointed in the MSF. Does that sound correct to you?

NADIA ZAARI: I don't recall the date. I have a feeling it was earlier, but it's somewhere. There was a nomination done so --

FRASER HARLAND: I mean, the date is less important than, I guess, the -- what impact did the site manager have?

NADIA ZAARI: So the site manager started in Hornell for a few months before

relocating to Ottawa first because there was nowhere to sit in MSF because it was still a construction.

And second is because we wanted the site manager to get acquainted to the team in Hornell, seeing the design, the first LRV before relocating to Ottawa. This was all part of the transfer of technology, and we did that with multiple people, not only the site manager.

It was almost like you get trained in Hornell, and you get to see how it is done before moving over there.

So I remember him spending a couple of month in Hornell and then relocating to Ottawa. So he was hired before by Alstom.

FRASER HARLAND: And so if he had been hired earlier, would that have had an impact, or was it more just a construction issue with MSF?

NADIA ZAARI: So it was hired -- he was hired earlier. That was plan on ramping up people. You know, we had plan to ramp up people that were new, so they needed to get acquainted to the product, the design, and everything. So it was nothing special here.

There was no desk for him to sit in

Ottawa, and, anyway, there was nothing in Ottawa. So it made just sense for him to spend a couple -- first month. I don't recall it being something odd or -- it was just the plan.

FRASER HARLAND: Can you tell me if Alstom had any challenges with finding sufficient personnel to work in the MSF? And I guess both sufficient in terms of the number of people, but also in terms of their skill set to do the work at the MSF.

NADIA ZAARI: So I don't recall that. I was part of the selection committee. Very early on, we put a request for proposal out on the market to hire an agency to identify candidate and do the recruitment for us.

I was part of the interview of five companies. We selected one company. And this company did pretty well. We had a staff-up plan, how many people we needed per weeks. We made some people come earlier. There was a lot of workforce that came from Canada were getting trained in the U.S. before going back and starting.

So I remember this being pretty smooth from an organization and finding the people.

FRASER HARLAND: Okay. And so you

had -- were there -- there were Alstom people relocated, but then there were also -- there was a Canadian workforce that was trained? Is that how it worked?

NADIA ZAARI: That is correct. So we had the staffing plan for MSF. It was a mix of people coming from Alstom, usually the manager position that were transferred from our other site to Canada to supervise. And then there was a mix of people that were hired by Alstom, become Alstom Canada employees that we trained by coming and spending a couple of months or Monday to Friday in our offices in Hornell. And then there was the workforce, which was essentially the workforce assembling the vehicle. They were temps. Some were employees, some were temps. There was a mix.

FRASER HARLAND: Did any temporary employees cause any challenges as far as you were concerned with the construction?

NADIA ZAARI: When I was there, I had zero concern. The temps and Alstom employees were treated the same way. And it's the same agency that was recruiting for us, so, no, absolutely no for me.

FRASER HARLAND: Just taking a step

back, can you tell me how the MSF compares to an Alstom facility like you would have worked at in Hornell or perhaps like the one in Valenciennes? What -- how were they the same? How were they different?

NADIA ZAARI: It's obviously different because the end purpose is not the same. The MSF is a maintenance and storage facility. The facility where we assemble our vehicles are factories. So the end use is very different.

However, the layout was built in a way to make it as efficient as possible for building assembly vehicle. So there was an area that was built only for the vehicle assembly. It was called the FVA. There was an area that was designed only for testing the vehicle, which is also what we have compared to our factory. We have different areas. And then there was an area that was a storage, which was an outdoor place.

So it had some similarity in certain way. It had some constraint also because it's a tight place in our factory. We have a lot more place. We have that luxury. So it required a lot of train moves to be able to utilize the space to the best possible.

FRASER HARLAND: So the issue at the MSF, would you say it was -- there was a challenge in terms of the design or just a challenge in terms of construction timing, or did both cause issues for --

NADIA ZAARI: So definitely the construction ongoing in parallel with the vehicle assembly created challenge. We don't have construction activities when we are building in our factory. So that created an additional constraint.

The other constraint, which we don't always have because our factory is usually of large size, is the train moves between the various position. Going from one position to a test position to a storage created additional difficulties.

So when I left the project, there was not too many train move because we had just finished two trains. But we could see already with two trains, oh, there's a lot of logistics involved and a lot of lost time for moving the trains. Now, I left after. I assume when you get 34 train, it becomes more complex.

FRASER HARLAND: Right. I want to come back to validation testing. To start, can you just

in your words explain what validation testing is?

NADIA ZAARI: So validation testing is what we do usually on the first one, two, three vehicle. We pick a number, small number, to validate that the vehicle performs in real life as designed per the requirement.

During that phase, we usually validate to find issues in the design and correct the design. And once this is done, then we start serial production.

FRASER HARLAND: Okay. Is it sometimes called type testing just so I --

NADIA ZAARI: Yes. Yes, I've seen it called type testing.

FRASER HARLAND: Okay. But, in general, the idea is that it would happen before other production and before other testing; is that right?

NADIA ZAARI: So it doesn't have to be fully completed before the serial test. I've seen different. Ideally, yes, but at least there needs to be some level of validation to be done before we start the serial test.

Some level, the most critical, the one that are most at risk of a design change, and we

test to find issue, not to find out that everything works per design. So there are some overlap. And this subcontract was built with some overlap, but not 100 percent overlap.

FRASER HARLAND: Okay. And you spoke to this already a little bit, but the early validation testing, did that happen in the Ottawa project?

NADIA ZAARI: So I left in September 2016. This is right when the validation was supposed to start. And I know at that time, I think we had already started five or six vehicle.

FRASER HARLAND: Okay. And the original plan, though, would have been that some would have been validation testing had happened much earlier than that; is that fair?

NADIA ZAARI: That is correct.

FRASER HARLAND: Okay. And the delays, I know you've spoken to this, but the delays in validation testing, what were those just so we have that for --

NADIA ZAARI: So I don't know on the delay on validation testing because I was not there.

FRASER HARLAND: Right.

NADIA ZAARI: It was starting -- for V5, it was starting right at the time when I left, September 2016. That's when the test track was supposed to be available.

FRASER HARLAND: But, sorry, I guess to say -- I mean, can you just tell us -- and I know you've said some of this already, but tell us again why it is that validation didn't happen as early as it had originally been planned.

NADIA ZAARI: So the validation of the train required two things, and I'm going to very simplify this is, first, you have at least one train completed, and, second, to have a test track available. Those were the two preconditions. I simplify -- oversimplify.

So Train 1 was, of course, shifted to the right and became available at a certain date. I can't remember from the top of my head. I would say summer 2016. And test track was available only starting September 2016. I'm pretty much sure of this date. Yes.

FRASER HARLAND: And ideally will validation testing on a prototype include at least some integration testing?

NADIA ZAARI: Are you talking

integration testing of the vehicle or the system?

FRASER HARLAND: Well, would it involve any testing between the signalling system and the train, I guess?

NADIA ZAARI: So the way our validation was built is we would validate our train first. So our scope of work, once our train was validated, then OLRTC would bring in the CBTC supplier and do the vehicle system integration testing, which was out of Alstom's scope.

FRASER HARLAND: Right. But if Alstom's validation testing is delayed, then it would also delay the testing of the CBTC system as well; is that right?

NADIA ZAARI: Most likely unless they came up with creative way to do things in parallel.

FRASER HARLAND: Do you know if Thales, the CBTC provider, was aware -- was consulted about the relocation decision that happened? Do you have any awareness of that?

NADIA ZAARI: No, I don't know. They must have been. I don't see how OLRT wouldn't have had a discussion with them. I just don't recall a meeting with Thales and myself and discussing this topic with OLRT.

FRASER HARLAND: But it's fair to say that, you know, late validation testing is going to have an impact on their schedule and their testing; is that --

NADIA ZAARI: So, yes, and the reason why I know is because while we were completing the Vehicle 1 assembly, Thales was still doing design change into their own equipment, if that makes sense what I'm saying. It's before we do vehicle system integration testing, they have to validate their own system. And they were still doing design change to their system.

FRASER HARLAND: Okay.

MICHAEL VALO: I'm sorry to interrupt. I just want to make sure for the sake of the transcript that we're all aligned on what we're talking about here.

The signalling system comprises two components: One is on the train, and one is what they call wayside, not on the train. And in order to test the system, both have to be installed, right?

So there is a second and parallel path on the signalling side that would have to have been completed if you were going to test that system

whether or not there was equipment on the train. And that's the only piece I wanted to clarify because it goes to your question about whether or not vehicles impact signalling integration testing.

FRASER HARLAND: Okay. Well, I guess, maybe I'll -- just to make sure we are all understanding this, I mean, in the original plan, it's my understanding that Thales would have been involved in some testing either in Valenciennes or in Hornell. Does that make sense?

NADIA ZAARI: There was no scope of work for Alstom to support any activity in Valenciennes or Hornell with Thales.

FRASER HARLAND: Okay. But could OLRTC have, you know, taken Thales or contract with Thales for them to do some testing in one of those locations?

NADIA ZAARI: So the one time I remember is OLRTC approached us and say, "Can you quote for us time and effort to support Thales to do testing in Pueblo, Colorado?" Of course we never ended up quoting because in the meantime, there was a change of direction. But there was the scope of work to support was never in the original scope of work of the contract.

FRASER HARLAND: Okay. Understood.

CHRISTINE MAINVILLE: Can I just ask, then, in light of what Mr. Valo indicated, how can Thales perform its testing in Colorado if it doesn't have the wayside piece of the signalling system?

NADIA ZAARI: So Colorado is a testing facility when they test signalling system. They welcome signalling supplier to equip part of their test track temporarily with signalling system until the tests are done, and you take it off. They also have some permanent installation. So Thales would have had to work that out with them.

CHRISTINE MAINVILLE: Okay. And do you know whether once the plan changed to Ottawa whether Thales was going to do part of its own -- I'm going to call it validation testing, but tell me if that's not the right term, on the test track or whether it was to be on the main line?

NADIA ZAARI: So when I was a PM, so up until September 2016, 100 percent of the conversation that we were having with Thales are about the design change at the vehicle level. Because there was so many design change, interface change that were causing what we call FMI, field

modification instruction, on the vehicle when we already had five vehicle assembled, then add a cable, change a cable, get me the onboard computer, that I recall the sole focus we were having at our level is to fix already what's on the train because what was delivered was not the final product.

I don't recall any discussion on the CBTC testing after on the test track. It might have happened after my time.

FRASER HARLAND: Maybe since you've raised this a few times, we can move to discussing the interface with Thales in a little bit more detail.

To start, I understand that Alstom didn't have a contractual relationship with Thales; is that right?

NADIA ZAARI: That is correct.

FRASER HARLAND: Was there any Memorandum of Understanding or other agreement between Alstom and Thales to your knowledge?

NADIA ZAARI: The only thing resides in the subcontract agreement. There was an appendix with an interface and who is doing what.

FRASER HARLAND: Okay. But that was in the contract with OLRTC?

NADIA ZAARI: That is correct.

FRASER HARLAND: And Thales had its own subcontract with OLRTC?

NADIA ZAARI: I never had access to that.

FRASER HARLAND: Okay. Do you know what previous experience Alstom had working with Thales systems?

NADIA ZAARI: So I personally didn't have any working with Thales. Thales is a signalling supplier. Alstom supplies also signalling equipment. So there must have been other interface there outside of the specifics of Ottawa, but me, no. Personally, no.

FRASER HARLAND: You don't know if this was the first time that an Alstom train worked with a Thales signalling system or if it had happened in the past?

NADIA ZAARI: Yeah, I personally don't know. It might be yes or no. I don't know.

FRASER HARLAND: Okay. And who was responsible for systems integration on the project to your knowledge?

NADIA ZAARI: To my knowledge, it was OLRT.

FRASER HARLAND: Okay. And do you know if they had a systems integrator in place?

NADIA ZAARI: Along the course of the project, they increased the size of their team by adding some people. So for me, yes. Was that sufficient or not? I wouldn't be able to say, but they increased their staffing.

FRASER HARLAND: So, to your knowledge, it was OLRTC was responsible. Did they subcontract the role to anyone, to SEMP, perhaps, S-E-M-P? Do you know anything about that?

NADIA ZAARI: I never heard about this company.

FRASER HARLAND: Okay. So what would you say OLRTC's approach to systems integration was particularly between Alstom and Thales?

NADIA ZAARI: The Alstom engineering team felt very often that OLRTC was pushing that system integration to Alstom. And pushing us to take the lead including answering direct to Thales, answering question, having meetings. And very early on, we put a stop to it because we didn't know -- we had no contractual relationship with Thales.

And that's where, I think, OLRTC

realized, and they staffed up their team. They even hired one dedicated person in their group who was managing the Thales interface and leading all the effort between Thales and Alstom.

FRASER HARLAND: Do you recall who that was?

NADIA ZAARI: Andrew something, which I understood stayed on the project and after went on to work for the City. And I would have to dig in my archives to find his last name.

FRASER HARLAND: In an ideal world, what should a systems integrator be doing on a project like this? What does it look like?

NADIA ZAARI: So I'm no expert in vehicle system integration, but from day one, considering the requirement in the subcontract that the document that OLRTC was to provide us, they should have had one person on staff probably before signing a contract with Thales before, making sure those documents were existing and everything in order to provide them to us on time.

We had the general feeling that Thales's contractual agreement with OLRT came much later and was not necessarily aligned with the requirement we had in our subcontract.

FRASER HARLAND: Okay. So let's talk about that. What was in Alstom's contract? What was Alstom's expectation in terms of what documents it would receive and when?

NADIA ZAARI: So from my memory, in the subcontract, there was a list of documents that were supposed to be frozen. I remember a document called the ICD which defined the interface between Thales's equipment and the train and number of cables coming in and out.

There was also requirement to have equipment delivered by a certain date so we can do the vehicle integration, mechanical integration, all this to build, design the vehicle to make sure we can integrate the Thales equipment. And that came very late in the process.

FRASER HARLAND: And according to the subcontract, were those supposed to be finalized or frozen designs? Is that --

NADIA ZAARI: That is correct.

FRASER HARLAND: And so what -- you said they came very late, so can you say more about that?

NADIA ZAARI: So through the various meeting that occurred between our engineering team

and the OLRT and Thales team, it came obvious to the engineering team that Thales was designing -- was still designing their own system. It was not an off-the-shelf product, and so they were still designing and finalizing. And so the dates were never going to align.

So we had to make assumption to move forward and not to block the whole process while they were progressing so that we could align at a certain time.

FRASER HARLAND: So, in your opinion, was it a reasonable expectation that Thales would have a frozen interface to provide at the beginning of the contract?

NADIA ZAARI: I don't see why not.

FRASER HARLAND: Like, did they have the information that they needed from Alstom in order for that to happen?

NADIA ZAARI: So I don't know what happened in the pre-bid phase and what was given or not given, so I wouldn't be able to tell what they had. I would assume that this was done in the procurement phase, selecting the supplier and knowing. And everybody did a bid phase, so that information was available. But, again, I joined in

in December 2013, so I wouldn't be able to know.

FRASER HARLAND: Okay. So there's no requirement, then, for some sort of back and forth of specifications and documents between the train manufacturer and the signalling supplier necessarily?

NADIA ZAARI: It was not laid out like that in the subcontract. It ended up happening like that. I think the biggest issue is this back-and-forth lasted way too long.

FRASER HARLAND: What did this back-and-forth look like? How did that happen?

NADIA ZAARI: It was back and forth of documents and revision of document involving an interface. That's how it was materialized. It was 3D files of equipment changing when we were well advanced in the design of the vehicle. Size of equipment to integrate, those kind of things that lasted way too long.

FRASER HARLAND: And OLRTC organized numerous interface meetings between Alstom and Thales; is that right?

NADIA ZAARI: There was a certain number of meeting, yes, organized by OLRTC.

FRASER HARLAND: Would you have

attended those meetings or --

NADIA ZAARI: I think I attended a couple. Most of the time, it was the engineering group. We had our contract management team attending most of them.

FRASER HARLAND: Do you recall Alstom expressing a concern at those meetings with not having a finalized CBTC specification?

NADIA ZAARI: Yes. There's multiple correspondence exchanged, notice of delay, minutes of -- every meeting was documented with minutes of meeting actions, and everything was well documented.

FRASER HARLAND: And what came out of those meetings? Were there agreements made between the parties that would then be implemented? Or how did Alstom use the information that came out of the meetings?

NADIA ZAARI: So most of the meeting that I recall were meeting where there were a set of action. Alstom, please provide this, or, Thales, please provide this, or OLRTC need that. It was a set of action to converge on the design.

FRASER HARLAND: Because I understand that at a certain point, Alstom decided to move

forward based on I think it was Version 2 of the ICD even though there had been discussion in the meetings about specifications that were being developed beyond that. Is that something -- does that ring a bell for you?

NADIA ZAARI: Yes, there was a point -- and I don't know if it was Version 2, but there was a point where we said we cannot wait any longer. We are going to impact the rest. We've already been impact with the early design and style decision, so we're going to draw a line in the sand at a version, and whatever you're going to come after is going to be, you know, quoted effort, time, and we'll see what it comes to.

If it's something we can accommodate and without impact, we'll do it. If not, we'll have to discuss. And it was -- it was clearly expressed to OLRT, and OLRT agreed with proceeding like that.

FRASER HARLAND: So then I believe you submitted on behalf of Alstom a variation request in January 2016 after receiving Thales -- I think it was the Revision 3; is that correct?

NADIA ZAARI: Yeah, I recall there was a change order request submitted.

FRASER HARLAND: And what was the response from OLRTC?

NADIA ZAARI: Probably responded with a letter with, "No, we don't want to pay" and the usual.

FRASER HARLAND: So is it fair to say that OLRTC was expecting Alstom to continue moving forward based on the product of these meetings, but Alstom was saying, "We're just going to move forward based on the finalized document that we have"? Like, what was the disagreement?

NADIA ZAARI: The disagreement was mostly on the financial. OLRT did not have a good understanding of what engineering effort it was causing at this stage of the project. They were minimizing the consequences of a V3 because of not understanding of what it takes to design, build in a vehicle and all the processes underneath. And adding a cable looks simple, but there's a lot of things that go behind adding a cable when you're so advanced in the design and the production.

We had already -- when V3 came in, I think we already had three trains started production. So that would mean retrofitting the trains, doing the design modification, cutting it

in. It was just another churn that was not needed.

FRASER HARLAND: Was there ever any information coming from Alstom that would have been new to Thales and required Thales to make specifications? Do you have a recollection of that?

NADIA ZAARI: I don't. The only thing I recall is when that new version came in, the engineer came and were almost discouraged and said, "I can't believe we're getting a new version now."

And I asked back then, it's like, did we ask for something? No, it just came out. And the whole exercise after this new release was done is to minimize the amount of change between this version and the previous version. And we had to explain why it was not so minimum.

CHRISTINE MAINVILLE: Can I ask you, given that there were these workshops or face-to-face meetings between Thales and Alstom, why is it that there was this level of misunderstanding in terms of what was coming next? And I ask in part because you indicated that Alstom conveyed to OLRTC that it would proceed based on a version of the ICD that it had, that it had to draw a line in the sand. Would that not have been

conveyed to Thales directly given that there were meetings with Thales, and if not, why?

NADIA ZAARI: So I think drawing a line in the sand did not preclude from getting next version. I think just the content of the following version was much bigger than what had been discussed.

And, again, it's about expectation of the content of the change. For sure there was ideas from all parties that there's going to be a change. That the change came that late with that amount of change was probably the thing that was a surprise to the engineers. And, of course, it depends how you see the change. When -- on our side, we were seeing significant change. On the other side, they were seeing, oh, it's simple.

FRASER HARLAND: So you've discussed the schedule, but another issue, as I understand it, between Alstom and Thales was what was actually produced and the VOBC system. So can you tell us what Alstom's expectations about the VOBC system would have been?

NADIA ZAARI: So the VOBC stands for the vehicle on board computer. It's basically the brain of the CBTC system. And it's connected to

what we call peripherals, an antenna, a screen. I make it simple here. So a couple of peripheral around, a speed sensor for the wheels.

Very early on in the project, based on the subcontract that says VOBC, Delivery 1, we had issued to OLRT our expectation when those parts were going to be delivered because not all those parts are mounted at the same stage of the vehicle. The VOBC needs to be mounted very early on because it's near the driver cabin. So if all the doors are placed, we cannot get in with the VOBC. So it has to come.

A speed sensor, well, an antenna, we can put it on at the end. So we had specific location, and we have issued to OLRTC what we call the zero dollar purchase order, which is basically phasing out all the deliveries that we were expecting from OLRTC to come to our factory with a purchase order for receiving the parts for Train 1 in Hornell and Train 32 to 34 in Ottawa.

Well, first, OLRTC, I think, just in the change of plans send the parts for the first two train in Hornell. So we had to reroute parts. And after the first two trains' parts were delivered, OLRTC approached us and say, "Oh, and by

the way, for the next delivery, the VOBC is going to come in bits and pieces, and you will have to assemble the bits and pieces."

FRASER HARLAND: So just to -- I want to hear more about that, but just to go back a second, did the VOBC for LRV1 and 2 not come in bits and pieces?

NADIA ZAARI: Did not.

FRASER HARLAND: Okay. So it was assembled as what we could call a plug and play system for the first two?

NADIA ZAARI: That's correct.

FRASER HARLAND: But following that, for LRVs 3 and following, you got what you're calling bits and pieces?

NADIA ZAARI: So we didn't get. We got a request or an information, "By the way, for the subsequent deliveries, you're going to get the VOBC in pieces, and you will have to assemble."

We went back to OLRT and asked why that was. OLRT explained to us that it was not in the scope of Thales to assemble it. Therefore, it was in our scope.

We pulled the contract, and we said, "It is not in our scope. It's a miss. You're the

system. You have to find a way."

And, by the way, VOBC is a safety system. We will not take liability for assembling bits and pieces of an onboard computer. So find a way, either you subcontract or Thales, but we need one full box, which they quickly understood. And it didn't last long. A few weeks, they realized that was the right way to do it. And so the subsequent delivery were delivered, like, Vehicle 1 and 2.

FRASER HARLAND: Okay. So you did eventually get plug and play systems as -- is that -- to install?

NADIA ZAARI: Correct.

FRASER HARLAND: Okay.

NADIA ZAARI: At least for 3, 4, and 5, which I witnessed. After, I don't know.

FRASER HARLAND: Right.

NADIA ZAARI: I would assume they did the same.

FRASER HARLAND: And were you there for the project for any of the PICO testing that would have needed to be done on the LRVs related to the VOBC?

NADIA ZAARI: No.

FRASER HARLAND: Okay. Could some of these issues both related to the schedule and related to, you know, the parts actually provided been avoided if there had been a systems integrator in place from the start of the project do you think?

NADIA ZAARI: It would have definitely helped with that. There was another subsystem which we haven't talked about, but it's the same story. That was the radio system that was supposed to be made available to Alstom per a certain date. OLRT was not able to provide it. They made it very clear that the City was still procuring the items, and they had no control over it.

So, again, same methodology. We say, "Well, we will assume this volume and this for the radio, and when the system -- the radio system is defined, you tell us, and we'll analyze the impact and everything."

FRASER HARLAND: Eventually, I understand, that OLRTC put an individual named Jacques Bergeron in place to help. Was he in his role while you were still on the project?

NADIA ZAARI: Yes, he was.

FRASER HARLAND: Did he coming --

becoming involved make a difference as far as the interface went in your opinion?

NADIA ZAARI: To my opinion, he's the only reason why we made progress. He was a key person, key interface to the City, key interface to us. And without him, I don't think we would have gone that far.

FRASER HARLAND: Okay. And so if someone like him had been involved from the very start of the subcontract, what would the implications of that have been?

NADIA ZAARI: And this is what the team told me every time, "Well, we wish we had Jacques from day one. We wish we had Jacques from day one." It would have definitely maybe helped accelerate the design freeze, the design style early on because obviously I attended a couple of meetings when he was there and pushing for decision. Decision on, yes, I accept this design. This is what I want. All those decisions were taking a lot of time to freeze the design. And he was instrumental on pushing people, the various stakeholder, to get the design frozen and moving on.

FRASER HARLAND: Was there any risk

that the core systems integration that happened would create performance or reliability issues with the trains?

NADIA ZAARI: I don't recall us discussing that back then. The biggest risk we saw was the schedule back then. This was our main focus, the integration. The design freeze interface was taking way longer than initially planned.

FRASER HARLAND: Okay. I still have a number of questions, but, Madam Reporter, I'm going to suggest that -- well, if we can go off the record.

-- OFF THE RECORD DISCUSSION --

-- RECESSED AT 2:21 P.M. --

-- RESUMED AT 2:35 P.M. --

FRASER HARLAND: Ms. Zaari, I just have a couple last questions on the interfacing with Thales topic. I just wanted to make sure as project manager, were you aware of the content of OLRTC subcontract with Thales?

NADIA ZAARI: No, I was not.

FRASER HARLAND: And in your experience, is that normal for subcontractors to have no knowledge, or what does that usually look

like?

NADIA ZAARI: I was not surprised. It probably had some commercial information, and as Alstom is also provide signalling system, it would make sense that we're not getting privy to that.

FRASER HARLAND: What about for schedules, though? Does it make sense to you that the schedules that both parties would be on would be kept from the other?

NADIA ZAARI: At the end, it's the system integrator to decide. We were submitting our schedule monthly. How that got distributed to the CBTC supplier, the other parties in the consortium was up to OLRT's decision. It was not ours.

FRASER HARLAND: But would it be fair to say that Alstom would have benefitted from knowing what Thales's schedule was in terms of its own schedule planning?

NADIA ZAARI: Not so sure because the schedule from Thales, what OLRT was supposed to give us from Thales was laid out in the subcontract, so that's all we cared about --

FRASER HARLAND: Right.

NADIA ZAARI: -- is when we freeze the

interface and when we get the equipment. That's all we cared. What happened in between doesn't help us for building vehicle.

FRASER HARLAND: Okay. And from an engineering perspective, what would the best division of the scope of work have been between Alstom and Thales? Was that reflected in the subcontract, or was the division of work not very effective in your view?

NADIA ZAARI: No, it's -- I would say it's a standard division of work, nothing out of the ordinary. We, Alstom, sometimes are signalling supplier to a car builder, and it would be very similar to that. So it was really nothing out of the ordinary.

FRASER HARLAND: Okay. But the way it happened was out of the ordinary, but the subcontract itself wasn't; is that fair to say?

NADIA ZAARI: That is correct.

FRASER HARLAND: And you've touched on this, but can you just say again what impact the interfacing issues had on Alstom's manufacturing and on Alstom's schedule?

NADIA ZAARI: So there was two main interface that were expected at certain date in the

contract. The CBTC interface and the radio interface. Those interface essentially define how those equipment are interfacing electrically and mechanically to the vehicle. So we are talking about size of the equipment. We're talking about number of connection, number of cables.

By not knowing that at the date, we had to design without knowing how many cables were coming into the VOBC. And as soon as we say cables, we talk about number of brackets, size of the bracket, cable routing, space on the driver cab was also a topic with the radio. So it's just because it connects with everything electrically, mechanically, it has ramification to the entire vehicle design.

FRASER HARLAND: And was the interfacing issue resolved by the time you left the project or what was the status of it when you left the project?

NADIA ZAARI: So when I left the project, the interface with the CBTC was not resolved because we were having OLRTC sending Thales employees come and do modification on the VOBC right on the production line which caused the issue because they were not trained for EHS to

enter our area. So it was just creating an additional disruption. So there were still modification done on the VOBC. The VOBC talks from a software perspective to what we call the train control management system. So there was potentially implication with the software of the vehicle to be looked at. So I know this was still ongoing.

On the radio, when I left, I know a couple of weeks before somebody came up and delivered a box and handed me a box and, "Oh, by the way, this is the radio that will go in the vehicle." And it was the first time we were seeing it, a part, and it was, like, three years into the project.

FRASER HARLAND: Okay. They may be very different, but you had mentioned that you had experience on another signalling project, I think, in France. Is that what you had said at the outset?

NADIA ZAARI: That is correct.

FRASER HARLAND: Were there similar issues experienced in that project, or perhaps they were too different to compare?

NADIA ZAARI: So they were similar

project in the sense that it was a brand new line. We were delivering the vehicle, the infrastructure, the signalling. Everything was under Alstom.

FRASER HARLAND: Okay.

NADIA ZAARI: One unity, and Alstom was the consortium lead. And we were addressing direct with the city. So it was a different contractual scheme, but the scope of the project was putting a brand new line of a light rail vehicle, what I think was, like, 20 stations, something like that.

FRASER HARLAND: But Alstom provided the signalling in that project you said?

NADIA ZAARI: Yes, to a different technology, not CBTC, but another system.

FRASER HARLAND: Okay. And if Alstom is providing both systems, does that make things, at least from Alstom's perspective, more manageable or --

NADIA ZAARI: Definitely.

FRASER HARLAND: Okay. Can you just say a little more about that?

NADIA ZAARI: Yeah, definitely. So when it's Alstom providing our own system, we have already this information upfront. Our vehicle is very often predispositioned to welcome our own

system. So it facilitates the interface. And it doesn't last that long.

There's some tweaks to do at the beginning very early on because every vehicle, although they have a common platform, they have some specific for each customer, but it does facilitate a lot.

FRASER HARLAND: Thanks. I want to move on to discussing the Canadian content requirement in the subcontract as well as some of the suppliers that were used by Alstom.

So you're aware of the Canadian content requirement in the subcontract. Can you just describe what the requirement was for us?

NADIA ZAARI: So from memory, in our subcontract with OLRT, we had to provide a minimum of 25 percent content per LRV on this subcontract.

FRASER HARLAND: And is that just about parts, or is it about labour as well? How does that work?

NADIA ZAARI: So it was not specified how we would do it, but we would definitely do a mix of parts and labour. Usually parts on a vehicle account for 60, 70 percent of the cost of the vehicle and 30 percent comes from the labour.

So it would have been a mix.

FRASER HARLAND: Okay. And did this requirement pose challenges generally for Alstom?

NADIA ZAARI: So early on where we were doing our procurement activities, we made sure that every time we were launching a procurement on the market that we would get at least one Canadian supplier, one American supplier, and another supplier in a more low-cost country. And so we would make -- we do a business award based on the best choice economical for Canadian content and for the project and the quality now we're experiencing, and there was a process for that. And that's how we were planning to achieve the 25 percent.

FRASER HARLAND: Okay. But in the Ottawa project, did it involve a lot of new suppliers for Alstom that it hadn't worked with before?

NADIA ZAARI: I'm not sure what "a lot" means. It had a certain number of new supplier that we involved. There were some supplier where the parts that were procured were high tech, and we didn't want to take any risk. So we had a risk assessment every time we were doing a business award depending on the complexity of the part

whether to involve a new supplier or not.

FRASER HARLAND: Are you aware of Alstom wanting to build out its supply chain in North America not because of the subcontract but internally to Alstom to have a supply chain built out in North America that it could use for other projects?

NADIA ZAARI: So the supply chain team that we were using is a supply chain team we had in Hornell, procurement team. They were procuring parts for all our project for North America. So, yes, it was a global. We didn't have -- I mean, some people were dedicated to Ottawa, but it was part of global North American supply chain team.

FRASER HARLAND: Okay. Just to talk about a few specific parts of the train, do you recall who the bogie supplier was?

NADIA ZAARI: Yes, I do.

FRASER HARLAND: Who was that?

NADIA ZAARI: So the bogies for the first -- I don't know if it's two, three for the first couple of vehicles were made in our design centre excellence in France, a site called Le Creusot. Bogies are made by Alstom. We don't buy bogies from a supplier. So we make them. We

buy some part, but we assemble. It's a critical part of the vehicle.

And the subsequent one, and I cannot remember starting which number, I think bogie 10, was made in our Alstom site in Sorel-Tracy with a transfer of technology between the two site.

FRASER HARLAND: Okay. But would the Sorel-Tracy supplier have been using new sub-suppliers, I guess, within North America for Alstom?

NADIA ZAARI: So the idea was we validate the supplier base by building the first ones, so let's say the first ten. And we use the same supplier base for the subsequent one. That was the target unless a supplier goes bankrupt or whatever, and we don't have any alternative, or we need to change. But the idea is to use the same supplier for the whole chain.

I do remember we bought parts for North America. We ship them to our site in France. The bogie got assembled. We did a temporary import, and we shipped back the bogie once assembled and tested.

FRASER HARLAND: And I understand that Alstom experienced some significant delay in

manufacturing due to bogies; is that fair?

NADIA ZAARI: That is correct.

FRASER HARLAND: Can you tell us more about that and what the root cause of that delay may have been?

NADIA ZAARI: The root cause was shared in full transparency with OLRTC. The first main part of the bogie is what we call the frame and the bolster of the bogie. Those are made of steel. They're the critical part.

We had selected a supplier in, I believe, U.S. from memory that have experience in this type of part as they're casting parts and was facing a lot of difficulty to produce those parts because the design was rather complex. And we were not getting the quality that we wanted. So we were having a lot of issue producing ten bolster and only getting one that we would accept from a quality one. And that created some delays, and that's the first part we need to build a bogie.

FRASER HARLAND: You mentioned the complexity of the bogie. Was the bogie in Ottawa more complex than in other Alstom projects?

NADIA ZAARI: So I don't know all the bogies on all Alstom projects that are used. I

wouldn't think so. It was definitely complex for that supplier.

FRASER HARLAND: Okay. So the complexity caused some issues in terms of supply; is that right?

NADIA ZAARI: That is correct.

FRASER HARLAND: Did that same complexity cause any issues in terms of performance as far as you're aware?

NADIA ZAARI: No, because once we managed to help the supplier build those part, and we invested in an expert in steel that was -- who located the supplier to help them get there when it was ramping up, then we never heard about it. It was just the ramp-up of the supplier to produce that part that caused us some issue. I didn't have when I was there any issue afterwards.

FRASER HARLAND: What impacts did this have on Alstom's manufacturing schedule?

NADIA ZAARI: So the first bogie were manufactured in France, so we had to ship all the parts in France, which was part of a plan from day one. There was no change in that.

We wanted to have the bogie manufactured and assembled in that location because

of that typical experience and technical complexity of a bogie. And then they were going to ship back.

They were shipped back to Hornell and Ottawa much later than initially anticipated. So in order to not impact the rest, what we created is a -- the dummy bogies. They are bogies that are just for mechanical fit to put the car on it, but you cannot use it to roll, but at least allows you to move the vehicle while the bogies are coming. So it allows you to mitigate the delay of the bogie. This is something we do. So we went and manufactured some dummy bogies. It's like a replacement wheel from your car that you take in the back just to get you going for temporary time until the final wheel comes.

FRASER HARLAND: And do you know what the cause of the delay in those first bogies being shipped was?

NADIA ZAARI: It was the bolster and the frame originally, which is the first part.

FRASER HARLAND: And that was for the ones being shipped from France, but there was also delay for the bogies used from LRV3 onwards as well; right?

NADIA ZAARI: So -- and, again, I left

in 2016. There was delay, but less of. This time the delay was linked to the supplier having to produce and ramp-up in capacity and produce more bolster per month to sustain the takt time of the line. But it was not as significant as the first one.

And I think when I left, we had probably only one or two dummy bogies that we were using under the vehicle, so a lot less.

FRASER HARLAND: And then in terms of brakes, I understand that the brake supplier was Wabtec. Does that sound correct to you?

NADIA ZAARI: Yes, I think so. Yes.

FRASER HARLAND: Do you know if that was a new supplier for Alstom?

NADIA ZAARI: It was not. Wabtec is a supplier very well-known on the market and used for various project.

FRASER HARLAND: And while you were on the project, were there any challenges with the brakes that you recall?

NADIA ZAARI: So there -- there was some challenges in the sense that we do what we call a first article inspection, which we do with all our suppliers before they deliver the first

part. And I do recall that our quality team would go and try and do the first article inspection and would turn out no-go. So they had to go back a couple of time before we can get a go, which is -- which gives clearance from a quality standpoint that the brakes are good to ship.

FRASER HARLAND: I understand that eventually there was a major retrofit done to replace calipers on the trains. Do you have any awareness of that?

NADIA ZAARI: So I think this happened post after I left.

FRASER HARLAND: After you left. Okay.

NADIA ZAARI: Yeah.

FRASER HARLAND: If it's after you left, maybe you can't speak to it, but would issues with a part like a brake like that be something that would be caught in validation testing?

NADIA ZAARI: So I don't know what type of issue, so it's hard for me to answer as I was not there.

FRASER HARLAND: No, that's fair. I don't want you to answer if you don't have the knowledge.

Can you recall Alstom experiencing any

other significant issues with suppliers while you were working on the project?

NADIA ZAARI: I do recall difficulty with the roof supplier, which is to the vehicle. It's like one of the foundation of the vehicle. So we have the under frame. The under frames were coming from one of the Alstom site. It's a critical part, so we decided to put in one of our Alstom factory.

The roof was made of aluminum, was deemed as more simple and less risky to have it manufactured by a new supplier, and we decided to manufacture those in Canada. Our Canadian supplier, and I don't remember the name, faced difficulties. They were expert in aluminum welding no doubt, but they had never manufactured a roof before of that size and of that type. They definitely had the experience. They just needed a little bit more hand-holding.

And, again, we dedicated and we hired a specific expert in aluminum welding to help the supplier get to the level of the product we were expecting. And that just created a little bit of delay on our side too.

FRASER HARLAND: Did these delays

affect the critical path of the vehicles while you were on the project?

NADIA ZAARI: So not to my recollection because those delays were caught very early on in the first LRV. So what we did in the factory in Hornell is we progressed the frame faster than the roof. And then when the roof came in, we put more resource over the weekend to catch up. Ultimately, the roof and the other frame have to progress at the same speed of assembly so that they are put on top of each other and boxed in. So we were able to mitigate that afterwards on LRV1. And after that, I never heard back about it.

FRASER HARLAND: What about with the bogies? Was there a critical path delay related to them?

NADIA ZAARI: Not when I was there. It was just extra pain for finding mitigation action and those dummy bogies and extra cost in fabricating those. So it was just extra things to do to mitigate the delay.

FRASER HARLAND: During your time on the project, were supply issues a main cause of delay for Alstom would you say?

NADIA ZAARI: So typical as any vehicle

build, the beginning, what we call the ramp-up, and we talked about the ramp-up for the factory. There's also a ramp-up for supplier. So every single supplier involved to supply parts have to ramp-up. And so we had put a task force to make sure all the suppliers were ramping up at the right speed with the right level of quality. So we had to create such task force.

I would say it's not unusual for vehicle build project to have that. So we did it.

FRASER HARLAND: How would the delay from supplier issues compare to delay that you faced from interfacing, for example?

NADIA ZAARI: So I think it's different in the sense that when you have -- so when you assemble a vehicle, there's some parts that you need to have to start. Like, if you don't have the under frame, you're not going to do anything. You can't move. You're stuck. So there are parts that are critical to the movement of the line.

However, there are parts that it's better if they're installed at this stage of the line, but they can be installed later on if we need to. And I give, I mean, simple example just to illustrate, you know, if we don't have the decals

that they want, well, not a big deal. If we don't have the seats, not a big deal.

So there are -- it depends on the type of parts. So we were monitoring specifically the one that were critical to us. And the other one we would just have mitigation plan.

So for me very different from the CBTC and the radio because this touches the design. And any design change on the vehicle at this stage go through a process of analyzing the design, making drawings updates, releasing the new parts or modified part in our supply chain, modifying a part. It's a much longer process. It's difficult to find ways to go around it and mitigate.

FRASER HARLAND: Okay. Do you know if Alstom had any issues with suppliers after the V5 schedule had been negotiated?

NADIA ZAARI: So when I left, there was still some issue with supplier. Nothing was 100 percent perfect. But I -- no suppliers stand in my head right now. It's just so long. It's six years ago. But definitely nothing was 100 percent perfect. It was the typical bumps. So we were -- I left we were at Vehicle 5. I know because we had a little party for celebrating start of Vehicle 5.

FRASER HARLAND: Okay. And while you were still on the project, was it apparent to you that significant retrofits would be required for LRVs under construction?

NADIA ZAARI: Yes.

FRASER HARLAND: And why was that?

NADIA ZAARI: Because we had started to build early LRV2, 3 without having started really validation anything. And we know when we validate or do type test is to find issue and correct them. So by nature, a scheduled V5 meant retrofit.

FRASER HARLAND: Right. And that would have meant a more intensive retrofit campaign than would have been planned; is that right?

NADIA ZAARI: That is correct. And I do remember that we were conscious of that, so we reviewed and had set up a dedicated team for field retrofit.

FRASER HARLAND: Do you have any knowledge about the attempt to negotiate further amendments to the schedule after the V5 schedule was approved or --

NADIA ZAARI: Yes, I know because my successor in September had reached out to me and said the test track is not available. The

validation would slip to the right. I see no other option than pushing the end date. Can you tell me how you discussed V5 and how you come to an agreement because I need to push the dates and find options with OLRT.

FRASER HARLAND: The person who took over that position of project director after you was Arnaud Lacaze; is that right?

NADIA ZAARI: That is correct.

FRASER HARLAND: Okay. Do you have any other knowledge of his negotiations other than that correspondence that you had with him at that time?

NADIA ZAARI: Besides just a couple of phone calls, him telling me OLRTC is refusing all our schedule proposal, they are not recognizing that the test track is delayed, and they don't want to accept any change of dates.

FRASER HARLAND: Can I just have you describe generally what Alstom's relationship with OLRTC was while you were on the project?

NADIA ZAARI: So there was essentially three people at OLRT we were interfacing with and various -- not just me, various people of the Alstom team. Alex Turner, Jacques Bergeron, and Yihong Xie. Those were the three people

essentially we would have on a regular basis.

We would not have any interface with the rest except with the City when they came to validate a design and came and visit us under OLRTC leadership.

We would have monthly meeting where we would present our monthly report, progress status, you know, exchange on topic. Schedule was one of them.

The engineering team would have several engineering technical meeting. We had two technical lead, one more electrical, one more mechanical that would interface with OLRT. So we'd have separate meeting there.

And then when we become more present -- OLRT was not at the MSF. Their office was not there, so we would not see them daily. But they would come once in a while to pay us a visit at MSF.

FRASER HARLAND: Would you describe it as a productive working relationship with OLRTC?

NADIA ZAARI: When Jacques Bergeron came in, it made a big difference. They were very productive. Yes, sometimes we agree to disagree. Especially when we were talking about commercial

items. But, overall, it was a good relation -- I feel it was a good relationship.

FRASER HARLAND: Okay. And how would you describe OLRTC as a project manager?

NADIA ZAARI: So we always felt they were probably a little bit short-staffed to address the other stakeholder that they had. We were not getting privy, but we'd see lots of people in Ottawa, and the City had a lot of people consultant. And they shared on occasion that they were struggling with all those people around and that had no knowledge about, you know, vehicle building and this type of procurement and yet had something to say in it.

So we had the feeling that it was difficult for them. And Jacques Bergeron was very good about, you know, I'll help you; you help me. So I felt that was with collaboration. But we were not really given privy to what they were doing the rest of the week and with other parties.

FRASER HARLAND: But it was your sense that they were underresourced for the project?

NADIA ZAARI: Yes, they were just everywhere.

FRASER HARLAND: What do you mean by

that?

NADIA ZAARI: Meaning everywhere is sometimes to find a meeting and time, we just had to struggle to find some time. So I just had the impression they were very busy.

FRASER HARLAND: Do you feel that they had the sufficient experience for running a project of this size?

NADIA ZAARI: So definitely Jacques Bergeron had the experience. Yihong Xie had the experience. I have nothing to say about them and their knowledge. Alex Turner was more like the contract side. He had also some vehicle experience. There were just not many of them.

FRASER HARLAND: And you mentioned OLRTC had numerous stakeholders that it was trying to manage. Did you feel that OLRTC paid sufficient attention to the vehicle part of the project while you were project manager?

NADIA ZAARI: I think so, but through a formal conversation, they would tell us what they were discussing with the other parties of the consortium and the construction piece. And they would share informally what was going on and where they were.

But from the vehicle side, I think so. They eventually also hired an additional person who was coming every day doing a check in the factory. At the factory -- I call it a factory. It's a vehicle assembly line.

We had asked them to put somebody in place as a site manager because they were not there on-site to handle all facility management issues. We'd come in, there was no air conditioning, the door does not work, all those facility management that were not in our scope of work. They ultimately hired somebody, so they staffed up progressively. And when we asked them, they did it.

FRASER HARLAND: Okay. What about your relationship with Thales? Can you speak to that?

NADIA ZAARI: So besides attending a couple of meetings and going once to their facility in Toronto, I had very limited personally interfaced with Thales. It was more the engineers.

FRASER HARLAND: Okay. You've mentioned the interfacing delay with the radios. Was that -- that was the P25 radios or P25 radios is that --

NADIA ZAARI: That's correct.

FRASER HARLAND: Okay. And when was that specification expected according to the subcontract?

NADIA ZAARI: Very early on in the first month of the project. We assumed it was radio existing and that it was a product of the shelf, and we would be given the specification, the volume, and model so we knew how to put it on the driver cabin. So I would say within a month or two within the subcontract that was what -- what was written from memory.

FRASER HARLAND: And what ended up happening with the radio? And I know you have already spoken to it a little bit, but if you can just tell us what the issue was there.

NADIA ZAARI: So when I join in the project, all the subcontract says is OLRT is to give the radio the same thing as CBTC. It didn't say who was the supplier behind. For us the supplier was OLRT. Where they got it from didn't really matter.

I found out very quickly that the radio was not something that OLRTC was buying themself. It was something that the City was procuring and was giving to OLRT, which then OLRT would give to

us. That was the scheme for whatever reason that was chosen.

So very quickly find out that OLRT had no control over the procurement or the availability of the radio. So we parked that topic pretty quickly, and we say, "Well, when it's available, when it's available." And they had told us that they were notifying the City about they needed to choose the radio, and this needs to happen quickly. But it was taking less space in our discussion because we realized OLRT had very little control about the availability of the interface and the volume.

FRASER HARLAND: And what were the implications of a late radio for the train construction?

NADIA ZAARI: So same thing, the radio has electrical and mechanical interface. So mechanically it needs to sit in the dashboard of the driver. Within that dashboard, there's multiple equipment. We needed to know the size of it and what shape just to keep a volume for it so when it comes in, it incorporates seamlessly. The microphone, where it was coming -- so all the mechanical integration was a question mark.

So I think what we did, from memory, is lack of information, we say, well, we'll do it assuming when we provide the radio because in other project, we buy the radio, and we put our own radio that we procure from another supplier. And then when it comes, then if it change, we'll see what is the change.

Same for the electrical connection, the radio is connected to an antenna cabling inside. So we did as if it was our own radio and crossed finger when it would come that it would not be too many changes.

FRASER HARLAND: And then, I guess, were you no longer on the project when the ultimate radio was selected?

NADIA ZAARI: I remember one thing, and I have that image that somebody showed up at MSF sent by the City with a package and say, "Hey, this is your radio." And I'm like, "Which radio?" "P25." I open up the box, and here's the product that we've been waiting since 2013. I'm like, it's never too late. I'll take it. And I left a couple of -- I give that to the engineer. I say, "We've got to figure this out." See if it fits or not, what we got to do to changes. And we already had,

like, five or six vehicles started.

FRASER HARLAND: And you said that was close to the time that you left the project that this --

NADIA ZAARI: That is correct.

FRASER HARLAND: Okay. And I understand that there were also issues with design and styling choices by the City that were late; is that true?

NADIA ZAARI: So I was not firsthand witness. That happened before I came in. But I happened to read the record of the letters that were sent by Alstom where Alstom had shared with OLRT and the City a key milestone when the design had to be -- only the design and style. So it's essentially the look and feel of the vehicle because those are dimensioning for the rest of the design. This is something we freeze very early on in the first few months of the project.

And it take -- took much longer to have OLRT, and OLRT claimed the City didn't come back to us in time. And then there was design change, and I remember the handrail, the bar where a passenger grabs on, the City wanted a lot more than initially was anticipated. And it took time to get how many,

where, where do you want a grabbing rail? We ended up having a variation order to offset the price difference, but it just took a lot of time early on.

FRASER HARLAND: Do you have an understanding of why it was taking so much time or so much longer than it would have in a normal project?

NADIA ZAARI: What OLRTC was telling us back then when we were asking the same question is the City is new in this procurement, and they have to make decision, and they have to involve many parties. And they didn't have necessarily the people. And just it took them more time to get themself organized and be patient with them.

And that's the type of answer we got from OLRT. We never asked the City personally, at least not me.

FRASER HARLAND: And did the radio issues and the design and styling issues have an impact on the V5 schedule?

NADIA ZAARI: So the design and style, definitely, yes. The radio, no, because we assumed a certain radio, and we said we're going to assume this is going to be the radio, and it's going to be

like that, and we'll see after V5. Once you get us the right radio, we'll assess the impact.

FRASER HARLAND: Okay. So that would have gone to further schedule negotiation after V5 based on the radio received?

NADIA ZAARI: That is correct.

FRASER HARLAND: To speak a little bit more about testing and commissioning, so there would have been some testing conducted of LRV1 and 2 while you were on the project; is that correct, at least static testing?

NADIA ZAARI: That is correct.

FRASER HARLAND: What would have that looked like?

NADIA ZAARI: So for LRV1, we did some minimum testing in Hornell. It was very minimum. From my recollection, we did water testing. We also made sure we could move the train, and the train can move under its own power, so that -- those are the basic baby steps testing that we do in a factory. And then we did the same after on LRV2.

There are minimum requirement of testing that we have to do before we go into the validation testing.

FRASER HARLAND: And validation testing had not started while you were still on the project, is that -- or had it?

NADIA ZAARI: So for me, validation testing truly starts when we get access to the test track, which had not. There was some level of testing minimum that was done before to prepare and everything, but minimum.

FRASER HARLAND: And the test track, was that something that you had expected earlier access to?

NADIA ZAARI: From my memory, the subcontract listed the test track available in September 2016, and this had never changed.

FRASER HARLAND: So that would have been just as you were leaving the project?

NADIA ZAARI: That is correct.

FRASER HARLAND: Do you know when it did become available, or is that not something that you're --

NADIA ZAARI: No, I don't know.

FRASER HARLAND: That wasn't really when you were there?

NADIA ZAARI: That is correct.

FRASER HARLAND: Okay. Is there any

other testing that happened while you were involved with the project?

NADIA ZAARI: So there are a set of testing, climatic chamber testing where we don't send the whole train. We send a portion of the train. This had started. We did the fire and smoke testing where we take a sample, so we mimic half of a vehicle, and we put it in a burn chamber, and we see when it burns. So there were some level of testing that was done, but it is not the validation testing. They're pieces of the testing -- the testing program.

FRASER HARLAND: And certainly no dynamic testing, I take it, if there was no test run?

NADIA ZAARI: There was some dynamic testing in a sense in Hornell. We moved the train -- so we have a much shorter track. So we move the train back and forth, back and forth. But it was minimum. It's not the size of a track that we had planned for validation testing. But just to see overall behaviour of the vehicle, low speed, basic first wheel turn on the vehicle that we do.

FRASER HARLAND: And so you didn't have any involvement in sort of assessing the

suitability of the track infrastructure or anything like that while you were on the project?

NADIA ZAARI: No, I was not. The only thing that I was surprised, and that was in summer 2016 is if we were going to start validation testing in September 2016, there's a lot of pre-work to do before starting the validation testing, going and doing a tour of the track, verifying the clearance and all this. And it was not in the shape to do. That's where I got a hint that, oh, this is not going to happen in September.

FRASER HARLAND: I don't think I have any more questions for you at this point, Ms. Zaari, but I think my co-counsel, Ms. Mainville, may have a few more questions for you.

CHRISTINE MAINVILLE: Just on that, did you have an understanding of what the delay was to the test track?

NADIA ZAARI: When I left, absolutely no.

CHRISTINE MAINVILLE: You spoke about Alstom signalling system being -- at least in your other project -- being a different technology than the CBTC system. And I wonder, is the CBTC

technology specific to Thales?

NADIA ZAARI: No. Alstom has also a CBTC technology.

CHRISTINE MAINVILLE: Was there anything about Thales's system on this Ottawa project that was distinct, to your knowledge, or was it a standard Thales system?

NADIA ZAARI: So I'm not knowledgeable enough to qualify their system. The only comment that was made several time to me is that the yard, so the MSF was apparently required to operate with CBTC when usually in the yard we don't put CBTC. We put manual operations. So the engineering team were like, "Why is this so complex? Why are they putting also CBTC in the yard?" So that was the only comment the technical team made to me about the CBTC solution.

CHRISTINE MAINVILLE: Okay. Do you recall any provision made or discussion about Alstom having to perform the PICO testing of the components within Thales's VOBC rack?

NADIA ZAARI: So I do recall per our subcontract with OLRT there was a share of work between OLRT and Alstom that the CBTC supplier would do PICO test on the first two train, I think,

and they would teach us and show us and do -- and we would do it. It was laid out in the subcontract, so that's what was written, which is typical.

CHRISTINE MAINVILLE: And perhaps this was after your time, but do you recall any issues being raised about that or concerns on Alstom's part being raised about being the one responsible for those -- for that testing?

NADIA ZAARI: So I do recall for the first LRV at least that the CBTC supplier was ready to come do testing, and our engineers were questioning, "Well, on which design version are we testing? What's the reference point?" Which is typical. When we do test it's, again, a baseline, so there was back and forth. "Okay, you can come, but what are we really testing? This version or this version?" So I do recall that.

I do recall discussion with OLRTC telling us, "Hey, if you need Thales to come over for testing, you need to give me X weeks of notice because there's only one guy at Thales that is expert in doing that, and he's fully booked for other projects." So if I don't give them the proper notice, we're not going to get him. Those

are the two conversation I do recall.

CHRISTINE MAINVILLE: Do you have an understanding or did you have an understanding generally of what the testing and commissioning plan was overall, you know, in terms of whether it had been entirely devised by the time you left and what -- including the criteria?

NADIA ZAARI: Yes. So me, personally, no, I don't know the detail. But we had a validation, project validation manager. We had a test and commissioning manager. And we were sharing with OLRT our test and validation plan, what was the content, what subsystem and everything.

It included all the vehicle testing at our level, the PICO testing, but it did not include vehicle system integration with the wayside on the track. This was out of scope for Alstom. This is -- the wayside piece was not included. We were limited to the vehicle piece.

CHRISTINE MAINVILLE: So Alstom devised the testing and commissioning plan for the vehicles.

NADIA ZAARI: That was our scope of work.

CHRISTINE MAINVILLE: And then does that get approved typically by OLRTC?

NADIA ZAARI: Yes. So the subcontract was made, so it was already laid in an appendix of what it was, what it was going to be. So the basic foundation were there. All we had to do was be a little more precise on the test procedure, the steps and things like that. But a lot of it was already in the contract.

CHRISTINE MAINVILLE: Okay. And beyond the vehicle testing, I take it you weren't the person responsible for this anyway, but do you know whether it would -- whether the testing and commissioning manager for Alstom would have had some awareness of the broader plans for testing and conditioning and trial running?

NADIA ZAARI: So the test and commissioning manager was making sure to execute Alstom's scope of work, which was limited to the vehicle testing. At one point -- and that was discussed under my time with OLRT, so I can talk to it.

Once we're done with the vehicle testing, our part, there was going to be a hand-over to OLRT, and OLRT was going to do with

whoever they need because you have substation, other system on the line, whatever wayside, and do their own testing. So they would take over vehicle, do their testing, and then they would return the vehicle.

So when I left, we were discussing that principle and how to make it work.

CHRISTINE MAINVILLE: Okay. And so Alstom would be involved in those discussions or at least have some input?

NADIA ZAARI: Not necessarily. We give them -- they're the vehicle. They're the system integrator. We give them the vehicle. Of course if they want to do something with the vehicle and they aren't sure, they're more than welcome to ask question. But, I mean, it was not in our scope of work to define what needed to be done at system to validate the overall system.

So we give them the vehicle, and we provide some tech support if they have question, the vehicle behaved in a certain way. But that was what we discussed. What happened afterwards, I cannot talk to it.

CHRISTINE MAINVILLE: What about winter testing in terms of Alstom's scope, was there -- do

you recall what may have been provided for that?

NADIA ZAARI: So there was a requirement in the contract and to do some climatic test which are done in a climatic chamber. We selected a climatic chamber in Ottawa because of the size of the chamber. It's not fitting a full train. So I think the train is four module, from memory, so we would fit only one module and do the climatic test. So the climatic test chamber basically for snow, I don't know, wind, whatever we define. And I left it there in terms of definition of environment testing.

CHRISTINE MAINVILLE: Do you recall -- I know you left not that long thereafter, but do you recall whether the Rideau sinkhole in 2016 had an impact on Alstom's work or project that would have impacted Alstom?

NADIA ZAARI: So I do recall that sinkhole because it was a day I was in Ottawa, and I wake up, and I read the news, and that's first page on the news. So, yes, I recall that event.

I mean, OLRT didn't need to inform us. It was in the news all over, so it was easy to know about.

We didn't have many discussion with

OLRT because the sinkhole happened, I think, downtown on the middle of the line, and that was not a portion of the line that we had planned to utilize for the test track.

So we had -- it's unfortunate, but for us because the test track is not on that path, we probably won't be impacted, but we did recognize that it was probably going to bring some turmoil in the construction team. And we got a little bit concerned if that construction team would be too focused on fixing the sinkhole and not finishing MSF, which had still a lot of work. So that's the only recollection I have for the sinkhole.

CHRISTINE MAINVILLE: And would you have been there to see any of those repercussions or whether that, in fact, materialized?

NADIA ZAARI: No.

CHRISTINE MAINVILLE: I just want to be clear on who oversaw the schedule for Alstom. Would that have been you as the project manager?

NADIA ZAARI: So me directly, I was reviewing daily schedule. We had a project scheduler also involved. I would review the schedule with OLRT. We had requirement to submit monthly the project schedule, and in additional, I

was personally providing to OLRT a weekly status update of where we are with the vehicle production. There was some kind of dashboard we had put in place so OLRT could fulfill their reporting requirement to somebody.

CHRISTINE MAINVILLE: And how would you -- well, let me put it this way. Would the engineers and workers have an awareness of the schedule, you know, like, how do you manage that ensuring the deadline is met?

NADIA ZAARI: So I'm assuming you're talking about the MSF.

CHRISTINE MAINVILLE: Just in terms of the -- meeting the RSA and the delivery of the vehicle generally.

NADIA ZAARI: Okay. I'll probably speak to the MSF because it's more concrete. So we had at the MSF live on the floor what we call visual management. There was the -- the schedule was on a big board, and every day we would have daily huddle with all the workers on the line and say, "This is what we got to do today. This is the plan." We would come at the end of the day. We would have two shifts.

When we change shift, we would share

what the previous team -- what hurdle they found, and if they could make it or advance faster. So this was done by visual management on the floor.

And on top of it, we would have OLRT representative comes, I think, every morning -- end of the morning to do a checkpoint of where the production line. And at least we did that for the entire time I was on the project. That was part of Alstom offering visibility to OLRT to keep them aware what was the status.

CHRISTINE MAINVILLE: And I think you've said this, but by the time you leave, the RSA date is still May 2018. And does Alstom still believe -- or did Alstom at that point in time believe that that could still be met?

NADIA ZAARI: So when I left the project, because of what happened on the -- what I witnessed from the test track, and I had my doubt this test track would be available, because of the state of the MSF that it was still one year later after we moved in still in a construction shape, we were having a lot of construction, I had doubt on that May 2018.

CHRISTINE MAINVILLE: You were focused on the test track, but am I right that for

integration testing -- for complete integration testing, you would need full access to the main line and the guideway?

NADIA ZAARI: So my recollection of the discussion was that for our own vehicle testing, our own scope of work, we should be able to validate the vehicle on the test track. I think it was 4 kilometres or double way. There were some requirement about what that test track needed to have. We would need to be able to reach certain speed, the curve of the -- there was a couple of elements there.

After that, it was more OLRT as the system integrator that needed the entire line to do the vehicle and the system integration testing, but that was not in our scope of work.

CHRISTINE MAINVILLE: And it would have been more significant, perhaps, for Thales than Alstom; is that fair?

NADIA ZAARI: That is correct.

CHRISTINE MAINVILLE: Okay. Those are my questions. I wonder --

FRASER HARLAND: I was just going to give Ms. Zaari an opportunity to raise anything or to ask you if there's anything that we haven't

covered today that you think is important for the Commission to know about.

NADIA ZAARI: I pretty much think we covered all the topic when I was there on the project.

FRASER HARLAND: Michael, anything from your end?

MICHAEL VALO: No, thanks. All good.

CHRISTINE MAINVILLE: We can go off record.

-- Adjourned at 3:32 p.m.

REPORTER'S CERTIFICATE

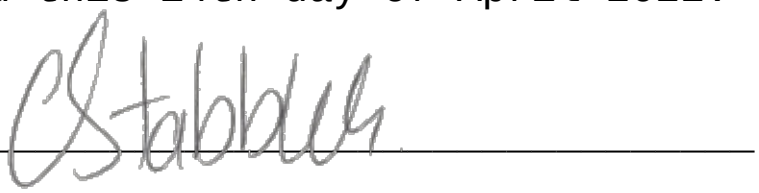
I, CARISSA STABBLER, Registered Professional Reporter, certify;

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 14th day of April 2022.



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