

# Ottawa Light Rail Commission

Dr. Roger Woodhead  
on Tuesday, April 19, 2022



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6	OTTAWA LIGHT RAIL COMMISSION
7	RTG ENGINEERING JV - DR. ROGER WOODHEAD
8	APRIL 19, 2022
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15	--- Held via Zoom Videoconferencing, with all
16	participants attending remotely, on the 19th day of
17	April, 2022, 2:00 P.m. to 5:00 p.m.
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1 COMMISSION COUNSEL:

2 Christine Mainville, Co-Lead Counsel Member

3 Anthony Imbesi, Litigation Counsel Member

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5 PARTICIPANTS:

6 Dr. Roger Woodhead: RTG Engineering JV

7 Michael Vrantsidis: Gibbs Law

8

9

10 Also Present:

11 Deana Santedicola, Stenographer/Transcriptionist

12 Laila Butt, Virtual Technician

13 Talia Gillan, Virtual Technician in Training

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1 \* \* The following is a list of documents undertaken  
2 to be produced, items to be followed up on, or  
3 questions refused \*\*

4  
5 INDEX OF UNDERTAKINGS

6  
7 The documents to be produced are noted by U/T and  
8 appear on the following page/line: 41:23, 68:13  
9

10  
11  
12 INDEX OF EXHIBITS

13	14 NO.	15 DESCRIPTION	16 PAGE/LINE NO.
17	1	Curriculum vitae of Roger Woodhead, Ph.D., P.Eng.....	13:24
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1 -- Upon commencing at 2:02 p.m.

2

3 DR. ROGER WOODHEAD; AFFIRMED.

4 CHRISTINE MAINVILLE: Thank you, Dr.  
5 Woodhead.

6 The purpose of today's interview is to  
7 obtain your evidence under oath or solemn  
8 declaration for use in the Commission's public  
9 hearings.

10 This will be a collaborative interview  
11 such that my co-counsel, Mr. Imbesi, may intervene  
12 to ask certain questions.

13 If time permits, your Counsel may also  
14 ask follow-up questions at the end of the  
15 interview.

16 The interview is being transcribed and  
17 the Commission intends to enter the transcript into  
18 evidence at the Commission's public hearings,  
19 either at the hearings themselves or by way of a  
20 procedural order before the hearings commence.

21 The transcript will be posted to the  
22 Commission's public website, along with any  
23 corrections made to it, after it is entered into  
24 evidence.

25 The transcript, along with any

1 corrections later made to it, will be shared with  
2 the Commission's participants and their Counsel on  
3 a confidential basis before being entered into  
4 evidence.

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

11           And finally, pursuant to Section 33(6)  
12 of the Public Inquiries Act (2009), a witness at an  
13 inquiry shall be deemed to have objected to answer  
14 any question asked of him or her upon the ground  
15 that his or her answer may tend to incriminate the  
16 witness or may tend to establish his or her  
17 liability to civil proceedings at the instance of  
18 the Crown or of any person, and no answer given by  
19 a witness at an inquiry shall be used or be  
20 receivable in evidence against him or her in any  
21 trial or other proceedings against him or her  
22 thereafter taking place, other than a prosecution  
23 for perjury in giving such evidence.

24           And as required by Section 33(7) of  
25 that Act, you are also advised that you have the

1 right to object to answer any question under  
2 Section 5 of the Canada Evidence Act.

3 DR. ROGER WOODHEAD: Okay.

4 CHRISTINE MAINVILLE: All right?

5 So we can start with you explaining  
6 your role in Stage 1 of Ottawa's LRT Project.

7 DR. ROGER WOODHEAD: Okay, so back  
8 in -- I think it was late in 2011, at the time I  
9 was working with SNC-Lavalin as a consultant, and I  
10 was helping them with the -- or I had helped them  
11 with the RFQ, the request for qualifications, for  
12 Ottawa, and at the same time, I was working on the  
13 Evergreen Line RFQ, another project, which was in  
14 Vancouver.

15 And I was expecting to be working on  
16 both, on the RFPs for both projects, but SNC asked  
17 me if I would be prepared to work just on the  
18 Ottawa project as the -- what at the time was the  
19 Project Director for what was called the DBJV at  
20 that time, the Design Build Joint Venture, which in  
21 turn became OLRTC at some stage.

22 So I became the Project Director for  
23 the Design Build Joint Venture, and I started  
24 working on the RFP sometime in late 2011, probably  
25 November or December.

1                   In 2012, at the beginning of 2012, I  
2 moved to Toronto, and for the rest of 2012, I  
3 worked in Toronto mostly working on the bid as the  
4 Project Director for the Design Build Joint  
5 Venture.

6                   The bid was put in, I believe it was --  
7 I don't know if it was September or October of  
8 2012, and a little while later, I was back in  
9 Vancouver, and we were asked to -- we were told  
10 that the City of Ottawa wanted to talk to us and  
11 they arranged a telephone call with us. I don't  
12 remember the date, to be honest. And in that  
13 telephone call, they told us that we were what was  
14 called -- I have forgotten the name. It was  
15 something like the -- it wasn't the Preferred  
16 Proponent. It was the First Negotiating Proponent.  
17 I think there is a bit of subtlety in that in that  
18 you are told that you are the first, but if you  
19 don't play ball, the second will take over.

20                   So we were called the first -- I think  
21 it was called the First Negotiating Proponent,  
22 something like that. So we then started to meet  
23 with the City of Ottawa, and I spent time going  
24 back and forth to Ottawa. And we had meetings also  
25 within RTG.



1                   And eventually in -- I think it was  
2 around about February 13th, 2013, the contract was  
3 awarded to RTG. And during the latter part of  
4 this, late 2012, early 2013, my role on the project  
5 was discussed within SNC-Lavalin, and I was asked  
6 if I would like to be the Project Director for  
7 OLRTC. And I thought about it, and I decided that  
8 my background and everything I had done in the past  
9 was as more of a design engineer and more of  
10 engineering, so I decided to take the role of  
11 Design Manager for the Engineering Joint Venture.

12                   So sometime in January or February I  
13 changed the role to become the Design Manager for  
14 the Engineering Joint Venture, and I lived in  
15 Ottawa from the day the contract was awarded, I  
16 think February 13th, 2013, and I left the project  
17 in July, I think the middle of July 2015, and I  
18 moved back to Vancouver.

19                   I had some involvement in the project  
20 after 2015, July 2015, but I had handed my role  
21 over to Dominique Quesnel, who had been my Deputy,  
22 and after that he managed the Engineering Joint  
23 Venture.

24                   CHRISTINE MAINVILLE: Thank you for  
25 that. As agreed with your Counsel, because you

1 would have separate Counsel in respect of your role  
2 with OLRTC and in respect of the bid period, this  
3 interview today will be limited to your work with  
4 the Engineering Joint Venture.

5 DR. ROGER WOODHEAD: Yes.

6 CHRISTINE MAINVILLE: Did your  
7 involvement in July 2015 end simply because you  
8 decided to return to Vancouver?

9 DR. ROGER WOODHEAD: Yes. The  
10 engineering at the time was probably about 80  
11 percent complete. I had confidence in Dominique,  
12 and I thought it was time to come back to  
13 Vancouver.

14 CHRISTINE MAINVILLE: And let's perhaps  
15 bring up your resumé. Thank you for providing  
16 that. And we can discuss a little bit your  
17 background and experience.

18 First of all, you are an Engineer, of  
19 course?

20 DR. ROGER WOODHEAD: Yes.

21 CHRISTINE MAINVILLE: And you have had  
22 significant experience with rail transit projects?

23 DR. ROGER WOODHEAD: That's correct.

24 CHRISTINE MAINVILLE: And were most of  
25 these P3s?

1 DR. ROGER WOODHEAD: It is listed on  
2 there in the third column.

3 CHRISTINE MAINVILLE: Right.

4 DR. ROGER WOODHEAD: The Millennium  
5 Line was -- I worked for the owner of the  
6 Millennium Line, and that was -- the contracts  
7 there were either design/build or design/bid/build.

8 The Canada Line was a P3.  
9 Confederation Line was a P3. After Confederation  
10 Line and to be -- I didn't really stay long in  
11 Vancouver. I was asked then to go to Toronto to  
12 work on the Eglinton Crosstown Transit Project  
13 which was a P3. And then in late 2016, I started  
14 to work on the Reseau Electrique Montreal, which is  
15 a DB contract. So they were not all P3.

16 CHRISTINE MAINVILLE: And did you have  
17 any experience with the vehicle manufacturing?

18 DR. ROGER WOODHEAD: Peripherally. For  
19 instance, on the Canada Line, I was the Technical  
20 Director, so I was -- there was a separate team who  
21 was procuring the vehicles and managing the vehicle  
22 procurement, but I was involved in a peripheral way  
23 in many aspects of integrating the vehicle,  
24 checking that the vehicle was -- would work okay  
25 with the system.

1                   So I wouldn't consider myself in any  
2 way a vehicle expert. I am more of a structural  
3 engineering background.

4                   CHRISTINE MAINVILLE: And, sorry, you  
5 said -- was this with the Canada Line?

6                   DR. ROGER WOODHEAD: Yes.

7                   CHRISTINE MAINVILLE: Okay. Would you  
8 consider yourself to have any expertise in systems  
9 integration?

10                  DR. ROGER WOODHEAD: Not really. Once  
11 again, I am not a systems engineer.

12                  CHRISTINE MAINVILLE: And can you tell  
13 me a bit about how these -- well, in particular,  
14 the Canada Line project, how that went? I  
15 understand it was on budget and completed ahead of  
16 schedule. Would you say that was a successful P3?

17                  DR. ROGER WOODHEAD: It was a very  
18 successful P3.

19                  CHRISTINE MAINVILLE: Are you able to  
20 make any observations about how this one or others  
21 you worked on compared to the Ottawa LRT Stage 1?

22                  DR. ROGER WOODHEAD: I can give you my  
23 personal opinion.

24                  First of all, Canada Line was totally  
25 under the control of SNC-Lavalin, just one company.

1 SNC-Lavalin had some subcontractors in in  
2 subcontract positions, for instance, on the  
3 construction of the elevated guideway, the  
4 construction of the tunnel. But SNC-Lavalin was in  
5 charge of that project. They had no -- it wasn't a  
6 joint venture that was doing the project.

7           The Vice President of SNC-Lavalin at  
8 the time was a very, very good manager. We had  
9 some very good people. The project had to be  
10 finished by the Winter Olympics. It was high  
11 profile. And I think we felt some pressure to be  
12 good citizens, as it were, for Canada, British  
13 Columbia and Vancouver. So there was pressures on  
14 the project, not extreme pressures, but we felt  
15 personally a pressure to finish the job well and on  
16 time.

17           But I would say the main reason it was  
18 successful was there was just one company and the  
19 people -- most people working on the project had  
20 experience in a rapid transit project before  
21 because there had been several built in Vancouver.

22           But those are my personal opinions.

23           CHRISTINE MAINVILLE: All right. Did  
24 you perceive a certain lack of experience on the  
25 Ottawa LRT project, whether it is in respect of

1 OLRTC or RTG more generally?

2 DR. ROGER WOODHEAD: I can talk about  
3 OLRTC, but I don't think I am supposed to. I think  
4 RTG -- the Engineering Joint Venture had sufficient  
5 experience. One of the issues were -- I mentioned  
6 the Evergreen Line. So SNC-Lavalin were also  
7 successful in obtaining the Canada Line -- sorry,  
8 the Evergreen Line. So some of the people that we  
9 wanted to work on the Confederation Line were not  
10 available full-time, as it were.

11 But I believe the Engineering Joint  
12 Venture had sufficient expertise to do this  
13 project. There were two large companies working on  
14 the engineering. They had lots of resources and  
15 the resources had, I believe, sufficient expertise  
16 to do the project from the engineering side.

17 CHRISTINE MAINVILLE: Okay. And just  
18 to be clear, I think you -- perhaps we can go off  
19 record for a minute.

20 [Discussion Off The Record.]

21 CHRISTINE MAINVILLE: First of all, we  
22 can take your resumé and we could file it as an  
23 exhibit.

24 EXHIBIT NO. 1: Curriculum vitae of  
25 Roger Woodhead, Ph.D., P.Eng.

1 CHRISTINE MAINVILLE: So you spoke  
2 about the Engineering Joint Venture's experience.  
3 Could you tell me a bit more about your perception  
4 of the experience and expertise of OLRTC's team for  
5 this project?

6 DR. ROGER WOODHEAD: So OLRTC  
7 unfortunately were not able to fully staff the  
8 project as they had proposed, so they were missing  
9 a lot of expertise because of that, when it came to  
10 starting the project. And in time, they started to  
11 hire people to fill some of these roles.

12 CHRISTINE MAINVILLE: And what was the  
13 missing expertise, from your perspective?

14 DR. ROGER WOODHEAD: Well, it was -- I  
15 would have to go and look at the resumé's, but I  
16 think, you know, for instance, the person who was  
17 named as the Project Director for OLRTC in the bid  
18 was not available. I believe that the Maintenance  
19 Director was also not available. And I am just  
20 going to take a look at a document I have here that  
21 I may or may not be supposed to take a look at.

22 CHRISTINE MAINVILLE: So long as you  
23 tell us what that is after.

24 MICHAEL VRANTSIDIS: Yes, and maybe we  
25 could go off record again real quick, please.

1 CHRISTINE MAINVILLE: Sure.

2 [Discussion Off The Record.]

3 CHRISTINE MAINVILLE: Okay, we can go  
4 back on the record. Thank you, we'll go back.

5 DR. ROGER WOODHEAD: So my recollection  
6 is that a lot of people that OLRTC were supposed to  
7 have in the project did not show up for some  
8 reason.

9 And by the way, that is not unusual on  
10 these projects.

11 CHRISTINE MAINVILLE: And you mentioned  
12 particular positions, but what is it in terms of  
13 expertise that they would have brought to the  
14 project that you believe ultimately was not  
15 brought?

16 DR. ROGER WOODHEAD: Rail transit  
17 experience, and other types of experience, but  
18 basically it would be that there is people who have  
19 worked on large rail transit projects before that  
20 have a certain expertise which they have gained  
21 through experience and these people are very  
22 important on when you land a new project.

23 CHRISTINE MAINVILLE: Okay.

24 DR. ROGER WOODHEAD: And just a little  
25 bit as an aside here, many organizations start --



1 if they know these people really don't want to move  
2 for three years will start with an interim project  
3 management team, for instance. That is one way  
4 around this. If those people really don't want to  
5 move to Ottawa for three years, you can start them  
6 off and get them to train and mentor other people.

7 CHRISTINE MAINVILLE: Okay, and --

8 DR. ROGER WOODHEAD: So just to come  
9 back, it is not unusual on these projects that the  
10 organization names people who for various reasons  
11 are not available.

12 CHRISTINE MAINVILLE: Right. And was  
13 it your understanding that -- or did you have a  
14 particular understanding about why they weren't  
15 available in this case?

16 DR. ROGER WOODHEAD: Some of them no.  
17 Others were -- I mentioned that SNC-Lavalin got the  
18 contract for the Evergreen Line at the same time,  
19 so some of SNC-Lavalin's people preferred to work  
20 on that.

21 And this is always a problem, as I  
22 mentioned, with these bids. Companies are always  
23 bidding on more than one contract, and if they get  
24 more than one of them, they have to make decisions  
25 as to who is going to work on which one.

1 CHRISTINE MAINVILLE: Okay.

2 DR. ROGER WOODHEAD: And for the people  
3 from the other companies, I have no idea why they  
4 did not come to Ottawa.

5 CHRISTINE MAINVILLE: Okay. Did you  
6 understand that there was a particular breakdown in  
7 terms of responsibilities as between the different  
8 members of OLRTC?

9 DR. ROGER WOODHEAD: No, not really,  
10 no. I think in many ways they were well-organized  
11 as far as what people did. They had the right type  
12 of organization in place. It was a question of  
13 whether they had sufficient experienced people in  
14 place.

15 CHRISTINE MAINVILLE: Okay. And can we  
16 just talk about who the partners were in the EJV  
17 consortium?

18 DR. ROGER WOODHEAD: So the two  
19 partners in the EJV consortium were SNC-Lavalin,  
20 probably SNC-Lavalin Inc. as opposed to SNC-Lavalin  
21 Constructors (Pacific) who were in the OLRTC  
22 consortium, and I am not really clear about the  
23 technicalities or the legal aspects there, but that  
24 is the way SNC-Lavalin managed these projects when  
25 they were in a design/build sort of focus.

1                   And the other company in the EJV at the  
2 time was MMM, Marshall Macklin Monaghan or  
3 somebody, who were a large engineering company.  
4 They had bought a company in Vancouver a few years  
5 before whose name escapes me, and I can't know -- I  
6 can't remember why. I don't know why, but they had  
7 bought out an engineering company in Vancouver who  
8 was very experienced in transit projects.

9                   So MMM were mainly -- amongst their  
10 expertises was transportation and rapid transit  
11 projects as well, but SNC-Lavalin really had the  
12 rapid transit experience in the Engineering Joint  
13 Venture, but the two companies fit very well  
14 together.

15                   CHRISTINE MAINVILLE: So was there a  
16 division of responsibilities there or roles?

17                   DR. ROGER WOODHEAD: Not specifically,  
18 although the job was split up so that each partner  
19 did certain tasks and supplied various people. And  
20 that is very common in these projects that the work  
21 is split up between the two companies, but the  
22 management tends to be a joint team.

23                   So even though I worked for  
24 SNC-Lavalin, my Deputy worked for MMM, who are now,  
25 by the way, WSP.

1 CHRISTINE MAINVILLE: And to the extent  
2 you know, was SNC, the SNC incorporated entity that  
3 was part of the Engineering Joint Venture, was that  
4 the same as the one who was part of RTG?

5 DR. ROGER WOODHEAD: No, I think -- I  
6 don't really understand the technicalities here,  
7 but SNC-Lavalin does its design through SNC-Lavalin  
8 Inc. and the construction at that time was done  
9 through SNC-Lavalin Constructors (Pacific), and I  
10 believe one of the issues might be liability for  
11 design and that is why it is kind of split up. But  
12 I am not sure, to be honest.

13 CHRISTINE MAINVILLE: Okay.

14 MICHAEL VRANTSIDIS: Counsel, if it is  
15 of any assistance, I understand the two entities to  
16 be distinct entities.

17 CHRISTINE MAINVILLE: Okay.

18 DR. ROGER WOODHEAD: And just to come  
19 back to Canada Line, there was no separate  
20 Engineering Joint Venture, no separate Construction  
21 Joint Venture. It was just SNC-Lavalin.

22 CHRISTINE MAINVILLE: Okay, thank you.

23 And the Engineering Joint Venture was  
24 not incorporated; correct?

25 DR. ROGER WOODHEAD: Correct.

1 CHRISTINE MAINVILLE: Do you know if  
2 there is any reason for that?

3 DR. ROGER WOODHEAD: I might have known  
4 at the time, but I don't remember now. It could be  
5 that it was difficult, time-consuming, expensive,  
6 and I really don't -- I should say I don't  
7 remember.

8 CHRISTINE MAINVILLE: Okay. In terms  
9 of the Engineering Joint Venture's scope of work,  
10 can you explain that a little bit, what EJV was to  
11 perform in terms of scope of work?

12 DR. ROGER WOODHEAD: Okay, in a big  
13 picture, the Engineering Joint Venture did all the  
14 engineering, the design of everything, except there  
15 were two pieces that were carved out: one was the  
16 vehicles and the other was the train control.

17 And let me explain a little bit about  
18 that. There were several reasons for this, but one  
19 of the ones within the EJV is that MMM, who weren't  
20 systems engineers, didn't -- wanted to exclude  
21 themselves from any problems that might come up  
22 with the system, so they didn't want anything to do  
23 with systems integration, the vehicle or train  
24 control.

25 And if I remember rightly, OLRTC didn't

1 really want to give up the train and the train  
2 control either. So there wasn't really a fight  
3 about the EJV not being involved in the design of  
4 the vehicles or the train control.

5 So there might be some other things  
6 that were not in the scope of the EJV, but those  
7 were the two main things.

8 CHRISTINE MAINVILLE: So who was to  
9 take on the systems integration role?

10 DR. ROGER WOODHEAD: That is -- that  
11 was in dispute, and I believe how it was settled in  
12 the end, because the contract wasn't clear --

13 MICHAEL VRANTSIDIS: Roger -- maybe we  
14 can hop off again for a moment, Counsel.

15 CHRISTINE MAINVILLE: Sure.

16 [Discussion Off The Record.]

17 CHRISTINE MAINVILLE: We can go back on  
18 record.

19 DR. ROGER WOODHEAD: So let's talk  
20 about systems integration, which is quite an issue  
21 here, and I want to say once again I am not a  
22 systems engineer, so my knowledge of systems comes  
23 from working on projects similar to this.

24 So the big issue in this contract, I  
25 mentioned that MMM didn't want anything to do with

1 the systems. They wanted to minimize their  
2 involvement in the systems, so during the contract  
3 negotiations, the contract was changed and "systems  
4 integration", I believe that word -- those words  
5 were removed from the contract and words like  
6 "interface" were added there, which, of course, is  
7 different to "integration". What the difference  
8 is, I am still not sure, but our contract talks  
9 about "interface" were with Alstom and Thales, and  
10 the interface was to be controlled by the prime  
11 contractor, OLRTC.

12 So what the EJV's role was, was to get  
13 information through OLRTC as to what the  
14 requirements would be of the infrastructure. So,  
15 for instance, the vehicle had a certain weight; it  
16 had a certain length; it had certain types of  
17 wheels, and it needed a certain type of power. So  
18 things like that were given to the EJV in order for  
19 them to design the rest of the infrastructure.

20 Similar sort of thing with Thales.  
21 What did Thales need along the lines so that they  
22 could communicate with the control centre.

23 So that was the role of the EJV. Let's  
24 say -- you could say it was to make sure the  
25 vehicle and the train control fit into the system.

1 But the real definition of "system integration" is  
2 that the company that is doing system integration  
3 has to be also involved -- has to be involved in  
4 the design, the construction and the testing and  
5 commissioning.

6 And the EJV had no involvement in the  
7 vehicle, in the train control, those contracts, and  
8 they had a minor role in the testing and  
9 commissioning and they were not involved in  
10 construction.

11 So in reality, there was no way the EJV  
12 could have been the system integrator, but it led  
13 to a dispute.

14 CHRISTINE MAINVILLE: Okay, and I will  
15 come back to that. But perhaps we can first  
16 clarify the contract that you are referring to. I  
17 understand there are two contracts between OLRTC  
18 and the EJV?

19 DR. ROGER WOODHEAD: Oh --

20 MICHAEL VRANTSIDIS: If I may there,  
21 Counsel, the two contracts being about -- one being  
22 the proposal, so pre-award, and the second being  
23 the services agreement.

24 CHRISTINE MAINVILLE: Right.

25 MICHAEL VRANTSIDIS: Which would have



1 been the only contract between the two parties  
2 post-award.

3 CHRISTINE MAINVILLE: Post-award, yes.

4 Okay, so when you are referencing the  
5 contract, Dr. Woodhead, you mean the services  
6 agreement which was -- am I right that it would  
7 have been entered into around March 2013?

8 DR. ROGER WOODHEAD: Yes.

9 CHRISTINE MAINVILLE: And would you  
10 have been involved in the negotiation of that  
11 contract or the drafting of it?

12 DR. ROGER WOODHEAD: No. So to be  
13 clear here once again, because SNC-Lavalin work for  
14 both the contractor and the designer, SNC-Lavalin  
15 are not allowed to be involved in negotiations with  
16 the engineering company.

17 So when I was working for OLRTC, I was  
18 not at all involved with the negotiations with the  
19 EJV, so I was not really aware of the proposal  
20 services agreement or what was happening to the  
21 negotiations.

22 CHRISTINE MAINVILLE: Do you know who  
23 was responsible for negotiating that contract?

24 DR. ROGER WOODHEAD: It would be -- the  
25 main two people would have been Daniel Botero who

1 was with Dragados, and Jamie Haldenby who was with  
2 EllisDon.

3 CHRISTINE MAINVILLE: But those would  
4 be on the OLRTC side; correct?

5 DR. ROGER WOODHEAD: Right, and on the  
6 EJV side, there was Chris McCarthy, Jeff -- and I  
7 have forgotten his last name, from MMM, Jeff  
8 Seider, Jeff Seider from MMM, and SNC-Lavalin had a  
9 commercial manager as well. I'll think of his  
10 name. His name escapes me at the moment. But he  
11 would be the commercial manager for the EJV. Let  
12 me just find his -- oh, Douglas Hoskins his name  
13 was.

14 So the people who would be negotiating  
15 on behalf of the EJV would be Chris McCarthy, Jeff  
16 Seider, Douglas Hoskins. There might have been  
17 someone else from MMM that I am not aware of, and  
18 then from OLRT, there would be Daniel Botero and  
19 Jamie Haldenby, and maybe some others as well.

20 CHRISTINE MAINVILLE: And Chris  
21 McCarthy was working with which company?

22 DR. ROGER WOODHEAD: He was with  
23 SNC-Lavalin. He was the Design Manager for the  
24 proposal.

25 CHRISTINE MAINVILLE: Okay. Once that

1 subcontract is executed, in the early stages of the  
2 project, in the design phase, was there someone  
3 performing the systems integrator role that you  
4 were aware of?

5 DR. ROGER WOODHEAD: Yeah, well, we had  
6 a person who worked for SNC-Lavalin called Keith  
7 Brown who was very involved in the project  
8 certainly at the start, and so he would have been  
9 involved in trying to help out with the systems  
10 engineering.

11 CHRISTINE MAINVILLE: And he was on for  
12 the Engineering Joint Venture?

13 DR. ROGER WOODHEAD: Yes, yes.

14 CHRISTINE MAINVILLE: So was he taking  
15 on a broader role than just what you have described  
16 in terms of interfacing with Thales and Alstom  
17 or --

18 DR. ROGER WOODHEAD: Yes, yes. So just  
19 another kind of -- this is once again somewhat my  
20 personal opinion, but because SNC-Lavalin sat on  
21 both sides of the table, I always felt that I  
22 should help out SNC-Lavalin, whether they were on  
23 the EJV side or OLRTC side. So I was always  
24 interested in helping OLRTC fill in gaps.

25 So for instance, Keith went to some

1 meetings with Thales that it was really up to OLRTC  
2 to go to those meetings, but Keith started to  
3 fulfil roles for a little bit of scope creep, let's  
4 call it, in the early stages.

5 CHRISTINE MAINVILLE: And you were  
6 saying you would -- despite how it has been  
7 explained that these are two separate entities, the  
8 SNC work that is responsible for design and SNC  
9 responsible for construction, there is a sufficient  
10 connection that you do see them as one or partners  
11 in some respect?

12 DR. ROGER WOODHEAD: I do, but that was  
13 my personal feeling. Other people didn't have the  
14 same feeling. They considered the other guys as  
15 not quite enemies but not the same team.

16 And this is partly my background on  
17 Canada Line, which is a project that went very  
18 well.

19 CHRISTINE MAINVILLE: And was OLRTC  
20 involved or aware to some extent of this scope  
21 creep or of Keith Brown performing some of this  
22 role?

23 DR. ROGER WOODHEAD: Yes.

24 CHRISTINE MAINVILLE: Can you speak to  
25 that a bit?

1 DR. ROGER WOODHEAD: So at the time,  
2 SNC-Lavalin was organized that there was a kind of  
3 rapid transit division, and we all reported up to  
4 the same person. So people working for the EJV and  
5 OLRTC for SNC-Lavalin had the same boss at the  
6 time, so there was some things that were discussed  
7 within SNC-Lavalin to do with making sure the  
8 systems engineering was done right.

9 And many people thought that having the  
10 systems engineering split, that OLRTC were going to  
11 do some and the EJV was going to do others, wasn't  
12 a good way to do this project.

13 So there was some feelings that we  
14 should somehow get on the same page within  
15 SNC-Lavalin as far as systems engineering, systems  
16 integration was concerned.

17 CHRISTINE MAINVILLE: And just before  
18 you go on, who was the person that everybody  
19 reported to?

20 DR. ROGER WOODHEAD: Somebody called  
21 Ron Aitken.

22 CHRISTINE MAINVILLE: Okay. And --

23 DR. ROGER WOODHEAD: And let me just  
24 say another thing here. I am not sure I am  
25 supposed to talk too much, probably not, but there

1 was a guy hired called David White to be the  
2 Project Director for OLRTC, and he was new to  
3 SNC-Lavalin, and he was also trying to help get the  
4 systems engineering on the same page with system  
5 construction.

6 CHRISTINE MAINVILLE: And so how did  
7 that play out ultimately?

8 DR. ROGER WOODHEAD: I guess it didn't  
9 play out too well, to be frank. I don't think it  
10 was because -- I don't -- it is difficult to say  
11 why it didn't turn out, but it wasn't because those  
12 people weren't really trying hard.

13 CHRISTINE MAINVILLE: So there were  
14 discussions about how to go about systems  
15 integration, who should be in charge, things like  
16 that?

17 DR. ROGER WOODHEAD: Right.

18 CHRISTINE MAINVILLE: And were you  
19 privy to these discussions?

20 DR. ROGER WOODHEAD: Yes.

21 CHRISTINE MAINVILLE: Okay.

22 DR. ROGER WOODHEAD: Some of them.  
23 Probably not all of them, but some of them.

24 CHRISTINE MAINVILLE: So did they just  
25 never land? Can you talk about why it was not

1 resolved, as I understand it.

2 DR. ROGER WOODHEAD: Sure. The  
3 contract for the EJV didn't cover a lot of systems  
4 engineering, so the EJV didn't have money in their  
5 bid to do a lot of systems engineering, so it all  
6 resolved around money at the end.

7 CHRISTINE MAINVILLE: Okay, and what  
8 was OLRTC's position in terms of whether they would  
9 take it on or they understood that it was their  
10 responsibility? What was their position?

11 DR. ROGER WOODHEAD: Their position was  
12 it wasn't their responsibility.

13 CHRISTINE MAINVILLE: Okay. And so  
14 just to be clear, because you spoke about how MMM  
15 was hesitant to take on the role, I understand that  
16 SNC, as part of the Engineering Joint Venture, did  
17 have that experience, didn't have that concern;  
18 correct?

19 DR. ROGER WOODHEAD: Right, yes.

20 CHRISTINE MAINVILLE: Okay. And so is  
21 your evidence that OLRTC was effectively trying to  
22 get the Engineering Joint Venture to take on that  
23 role?

24 DR. ROGER WOODHEAD: Yes.

25 CHRISTINE MAINVILLE: Okay.

1 DR. ROGER WOODHEAD: More of that role  
2 than we should have. OLRTC was never trying to get  
3 us to do the vehicle and train control design.  
4 That was never an issue. That was understood to be  
5 totally in their scope. The only sticking point  
6 was the systems integration.

7 CHRISTINE MAINVILLE: In terms of  
8 broader integration of the entire project?

9 DR. ROGER WOODHEAD: Right.

10 CHRISTINE MAINVILLE: Okay. And so to  
11 what extent did SNC, Mr. Brown, take on that role?  
12 Like where was the line, if any, that he drew or to  
13 what extent did he discharge that function?

14 DR. ROGER WOODHEAD: He probably  
15 started off doing more than he should have, and I  
16 would have encouraged him to do that, and  
17 eventually he ran into some conflicts, and he  
18 started to back off a little bit. And we didn't  
19 have the money to do it.

20 CHRISTINE MAINVILLE: And when would he  
21 have started backing off from that role?

22 DR. ROGER WOODHEAD: Probably late  
23 summer 2013. And when I say backing off, he stayed  
24 involved in the project. He just, let's say,  
25 wasn't quite so enthusiastic. I use that word a



1 little bit facetiously.

2 CHRISTINE MAINVILLE: Were these  
3 conflicts with OLRTC?

4 DR. ROGER WOODHEAD: Yes.

5 CHRISTINE MAINVILLE: About the scope  
6 of the --

7 DR. ROGER WOODHEAD: Mostly about the  
8 scope, yes.

9 CHRISTINE MAINVILLE: Are you aware of  
10 whether it was made clear to OLRTC that he would be  
11 backing off to some extent from that --

12 DR. ROGER WOODHEAD: Yes.

13 CHRISTINE MAINVILLE: Do you know if  
14 anyone took that on after that?

15 DR. ROGER WOODHEAD: Yes, they hired  
16 several people to try and manage the systems  
17 integration.

18 CHRISTINE MAINVILLE: OLRTC did?

19 DR. ROGER WOODHEAD: Yes.

20 CHRISTINE MAINVILLE: Okay, and so was  
21 there from that point on a better discharge of that  
22 role by OLRTC?

23 DR. ROGER WOODHEAD: I would say yes.  
24 There were still disputes, but they had people to  
25 fill that role, yes.

1 CHRISTINE MAINVILLE: Okay. And in  
2 terms of the integration of the vehicles and the  
3 train control system, did you have any  
4 understanding or knowledge of who performed that  
5 role within OLRTC?

6 DR. ROGER WOODHEAD: Yes, there were  
7 people on the organization. There was a guy called  
8 Jacques Bergeron, and he had some people working  
9 for him whose names I don't -- but there was a few  
10 people they hired, yes.

11 CHRISTINE MAINVILLE: Okay.

12 DR. ROGER WOODHEAD: They certainly I  
13 think, I would say, probably had enough people, and  
14 they probably -- did they have enough skills is a  
15 question mark, but they certainly had people with  
16 experience.

17 CHRISTINE MAINVILLE: Okay.

18 DR. ROGER WOODHEAD: But who had not  
19 worked on a P3 transit project before. They had  
20 worked on vehicles. They had worked on other parts  
21 of systems and similar types of systems, but they  
22 lacked the big transit experience.

23 CHRISTINE MAINVILLE: And what is --

24 DR. ROGER WOODHEAD: And by the way,  
25 you don't need everybody to have big transit

1 experience. You need a few people scattered at a  
2 high level who do.

3 CHRISTINE MAINVILLE: Okay. Do you  
4 know whether OLRTC had someone in the systems  
5 integrator role from the very beginning of the  
6 project for the -- sorry, for the vehicles and  
7 train control system?

8 DR. ROGER WOODHEAD: They certainly had  
9 some people, and I can't remember when Jacques  
10 Bergeron started on the project. They also had a  
11 Technical Director that they hired called Roger  
12 Schmidt who was kind of overall on the project, and  
13 I don't remember when he was hired. He wasn't  
14 there on day one, but he would have been there in  
15 the summer.

16 So it is not like they hired people a  
17 year later. It would be just a few months later.

18 CHRISTINE MAINVILLE: Okay. And was  
19 there, to your knowledge, sufficient coordination  
20 between the overall systems integrator and the  
21 vehicle systems integrator? Like was there an  
22 overarching integration of the vehicles within the  
23 other systems?

24 DR. ROGER WOODHEAD: I believe so.  
25 They had certainly people doing that, and they were

1 involved in meetings with Alstom and the  
2 procurement, and Alstom and Thales, I believe, were  
3 meeting, but the EJV wasn't very involved in that,  
4 except that we lent them Keith Brown occasionally.

5 CHRISTINE MAINVILLE: And you did  
6 mention that the EJV had some involvement in  
7 communicating what the requirements would be for  
8 the infrastructure as it related to the vehicles  
9 and the train control system --

10 DR. ROGER WOODHEAD: Yes.

11 CHRISTINE MAINVILLE: -- and vice  
12 versa. So what was the extent of the role that was  
13 performed in that regard and the interface between  
14 Thales, Alstom, and the EJV?

15 DR. ROGER WOODHEAD: So I would have to  
16 say I don't really remember. The things I do  
17 remember is there were -- one of the issues on  
18 these projects is what is called wheel rail  
19 interaction where we had to make sure that the  
20 train tracks that we were designing were suitable  
21 for the vehicle that was going to fit on them.

22 So we certainly were involved in that,  
23 and I think that was integrated quite well.

24 There was also -- we were designing the  
25 overhead catenary, and that was also integrated

1 quite well.

2 I think in general things were  
3 integrated. It wasn't like the vehicle showed up  
4 and didn't fit on the tracks. They certainly got  
5 the right amount of power. They rode on the  
6 tracks.

7 In reality, at the end of the day I  
8 don't believe anything was missed.

9 CHRISTINE MAINVILLE: What about in  
10 respect of the integration between Alstom and  
11 Thales? Do you have an awareness of how that  
12 integration ultimately -- whether it ultimately was  
13 properly or sufficiently integrated?

14 DR. ROGER WOODHEAD: I don't really  
15 know except I believe the vehicles ran okay.

16 CHRISTINE MAINVILLE: And --

17 DR. ROGER WOODHEAD: For awhile.

18 CHRISTINE MAINVILLE: And so was the  
19 Engineering Joint Venture interfacing at times  
20 directly with Thales and Alstom or always through  
21 OLRTC?

22 DR. ROGER WOODHEAD: Always through  
23 OLRTC.

24 CHRISTINE MAINVILLE: Were you often or  
25 occasionally, always at the same table?

1 DR. ROGER WOODHEAD: Yes. Yes. Very  
2 definitely there were a lot of joint meetings.

3 CHRISTINE MAINVILLE: Okay.

4 DR. ROGER WOODHEAD: And I would have  
5 told people in the EJV not to go to meetings with  
6 Alstom or Thales unless somebody from OLRTC was  
7 there, because our contract was very specific that  
8 everything had to be through OLRTC.

9 CHRISTINE MAINVILLE: Okay. And who  
10 were your counterparts mostly, if you were the one  
11 in attendance?

12 DR. ROGER WOODHEAD: I wouldn't be in  
13 attendance.

14 CHRISTINE MAINVILLE: You would not?

15 DR. ROGER WOODHEAD: No, I wouldn't go  
16 to these meetings. The --

17 CHRISTINE MAINVILLE: Mr. Brown?

18 DR. ROGER WOODHEAD: Mr. Brown, yeah,  
19 and various other people, probably.

20 CHRISTINE MAINVILLE: Could you speak  
21 generally then, based on your significant  
22 experience with these types of projects, about the  
23 systems integration on this project and how it  
24 compares, you know, whether it was lacking in  
25 certain respects based on how it ultimately --

1 based on how there was some confusion and  
2 ultimately some disagreement in respect of the  
3 role?

4 DR. ROGER WOODHEAD: Okay, so that is a  
5 difficult question because I left in 2015.

6 CHRISTINE MAINVILLE: Right.

7 DR. ROGER WOODHEAD: The trains weren't  
8 even running. So I believe that the work was done.  
9 It maybe wasn't done in the most effective and  
10 efficient way. There was a dispute about who was  
11 responsible for system integration, but that was  
12 resolved by another party being brought in to do  
13 it.

14 So at the end of the day, it wasn't the  
15 best way to do it, but I believe it was done,  
16 although I wasn't there.

17 And the kind of real answer to that  
18 question is how well testing and commissioning  
19 went.

20 CHRISTINE MAINVILLE: Right.

21 DR. ROGER WOODHEAD: And I have zero  
22 knowledge of that.

23 CHRISTINE MAINVILLE: Okay.

24 DR. ROGER WOODHEAD: So if it had been  
25 done well, testing and commissioning would have

1 gone okay.

2 CHRISTINE MAINVILLE: Do you have any  
3 awareness of what the testing and -- what the plans  
4 were for testing and commissioning?

5 DR. ROGER WOODHEAD: No.

6 CHRISTINE MAINVILLE: Okay.

7 DR. ROGER WOODHEAD: I might have had  
8 some inkling at the time, but I certainly don't  
9 have any knowledge of the testing and  
10 commissioning. I may have gone to some meetings  
11 about testing and commissioning, but I don't  
12 recall, quite honestly.

13 CHRISTINE MAINVILLE: Okay. Did  
14 Mr. Brown stay on or --

15 DR. ROGER WOODHEAD: Oh, sorry, I  
16 should say one thing. After I had left, there was  
17 an issue that came up about who was going to write  
18 the test plans. So for testing and commissioning,  
19 somebody had to write test plans, and in these test  
20 plans there would be various tests that had to be  
21 performed and how they were performed and how the  
22 organization would know that they had passed or  
23 failed.

24 And that was not in our contract, and  
25 OLRTC realized that around about the time I left or



1 just after I had left and the EJV got a change  
2 order to write test plans for them.

3 I have a little bit of knowledge of  
4 that because I had only just left and I got  
5 involved in this change order, but I have no  
6 knowledge of how the testing and commissioning went  
7 at all.

8 You know, if you read my resumé, you'll  
9 see that I went to work on other projects which  
10 were very demanding, so I didn't really have a lot  
11 of time to be involved in the Ottawa project.

12 CHRISTINE MAINVILLE: And just to be  
13 clear, do you mean the plans and criteria for trial  
14 running specifically or more broadly?

15 DR. ROGER WOODHEAD: No, way before  
16 trial running. This would be the system -- there  
17 was a whole bunch of tests to be done before trial  
18 running. One was -- a lot of things were tested in  
19 the factory. It is called a factory acceptance  
20 test, and the next is the system itself is tested  
21 and that is called a system acceptance test or a  
22 SAT. And then there is integration done, and those  
23 tests are called system integration tests. And  
24 then after the systems integration tests come trial  
25 running, generally.

1 CHRISTINE MAINVILLE: So your  
2 understanding is that RTG EJV had a role in all of  
3 these?

4 DR. ROGER WOODHEAD: No.

5 CHRISTINE MAINVILLE: Not -- in  
6 devising the tests?

7 DR. ROGER WOODHEAD: Just for the tests  
8 for, I believe, the -- I don't know whether it was  
9 a system acceptance test or the system integration  
10 test, but it was just to write the test plans.

11 And generally, our engineers, our  
12 design engineers, would witness some tests. So  
13 once again, this is after my time, so maybe our  
14 engineers were involved in reviewing other test  
15 plans. I don't know, to be honest.

16 But I personally know nothing about  
17 trial running.

18 CHRISTINE MAINVILLE: Counsel, if you  
19 are able to just confirm after this whether the EJV  
20 was involved in devising the integration, the SIT  
21 testing plans, and if so, who might be able to  
22 speak to that, that would be appreciated.

23 U/T MICHAEL VRANTSIDIS: We'll let you  
24 know.

25 CHRISTINE MAINVILLE: Thank you.

1                   What was your level of knowledge and  
2 understanding of what the vehicle requirements were  
3 in order for the EJV to do its own work?

4                   DR. ROGER WOODHEAD: So just to put my  
5 Engineering Joint Venture hat on, we would have had  
6 to know how much the vehicle weighed, what would be  
7 the maximum speed, something about the forces it  
8 was going to transmit to the rails and to the  
9 structures, the size of the vehicle so it wouldn't  
10 hit any of the wayside equipment, things like this.

11                   It was a vehicle that could have run  
12 automatically probably, but there was a driver, so  
13 we would have had to have known some things about  
14 that.

15                   And as far as the train control, we  
16 would have had to know what Thales wanted to put  
17 alongside the track.

18                   CHRISTINE MAINVILLE: In terms of  
19 speed, there was a guaranteed journey time,  
20 correct, as between stations?

21                   DR. ROGER WOODHEAD: I think so.

22                   CHRISTINE MAINVILLE: So to what  
23 extent --

24                   DR. ROGER WOODHEAD: So, sorry, I do  
25 remember there was a -- the main criteria in the

1 RFP was to do with the capacity of the system; in  
2 other words, how many people it could carry and the  
3 time the vehicle -- the travel time was part of  
4 that calculation. The number of people in the  
5 vehicle and the travel time would be important as  
6 far as the capacity of the system, and there would  
7 be a maximum design speed.

8 CHRISTINE MAINVILLE: Do you recall  
9 what that was and whether you have any views on  
10 that?

11 DR. ROGER WOODHEAD: I would like to  
12 say off the top of my head it was 80 kilometres an  
13 hour. It might have not been 80 kilometres an  
14 hour.

15 So maybe I should say I don't remember.  
16 But it was reasonable.

17 CHRISTINE MAINVILLE: It was  
18 reasonable. You don't recall whether that created  
19 any kind of challenges for the EJV?

20 DR. ROGER WOODHEAD: No. If it was 80,  
21 it is the same as most projects. There might be  
22 some curves with less where it would have to go a  
23 bit slower, and obviously it slows down going into  
24 a station and stops and then starts up again.

25 CHRISTINE MAINVILLE: Right. So do you

1 recall --

2 DR. ROGER WOODHEAD: And sorry, just  
3 one more thing on the speed. Generally, the speed  
4 sometimes is a bit faster than that, because if  
5 they are running behind the schedule, they would  
6 go -- try to go a little bit faster.

7 CHRISTINE MAINVILLE: Uhm-hmm.

8 DR. ROGER WOODHEAD: But not a lot  
9 faster.

10 CHRISTINE MAINVILLE: Do you recall  
11 whether EJV -- well, to what extent it had to  
12 account for the speed in terms of, as you say, the  
13 curves and the track alignment?

14 DR. ROGER WOODHEAD: Yeah, that would  
15 be basically -- and also the design of the  
16 structures, because the vehicle bounces a bit, the  
17 speed could be important in the design of the  
18 bridges. There would be an impact factor that  
19 could be affected by the speed, but probably not.  
20 It would be mostly the curves and things like that.

21 CHRISTINE MAINVILLE: Are there tight  
22 curves on this track?

23 DR. ROGER WOODHEAD: I am sure there  
24 are, but I don't remember, to be honest.

25 CHRISTINE MAINVILLE: You don't recall

1 any particular issues with that?

2 DR. ROGER WOODHEAD: I don't recall any  
3 issue at all with the track. The track was --  
4 generally on these projects, when you start to bid  
5 on them, the owner has hired an engineering company  
6 to do a preliminary design, and I believe we  
7 probably followed the preliminary alignment.

8 CHRISTINE MAINVILLE: Yes.

9 DR. ROGER WOODHEAD: So I don't believe  
10 there were any issues, but there might have been.

11 CHRISTINE MAINVILLE: And I'll follow  
12 up on that in a second, but just finishing up on  
13 the vehicles, was there any aspect of the vehicle  
14 requirements that posed a challenge for the design  
15 that the EJV was in charge of, to your  
16 recollection?

17 DR. ROGER WOODHEAD: Not to my  
18 knowledge.

19 CHRISTINE MAINVILLE: Such as the low  
20 floors or anything like that?

21 DR. ROGER WOODHEAD: No, no, no.  
22 They -- I guess the concern of the low floor would  
23 be in the snow, but I believe they had plows on the  
24 front or they ran frequently enough for that not to  
25 be a problem. I don't recall there being a problem

1 with the low floor.

2 CHRISTINE MAINVILLE: Okay. I take it  
3 the preliminary design engineers, that was Capital  
4 Transit Partners?

5 DR. ROGER WOODHEAD: Yes.

6 CHRISTINE MAINVILLE: So would the EJVB  
7 have had interactions with them?

8 DR. ROGER WOODHEAD: Yes. So our  
9 designs -- first of all, when we did designs, there  
10 were a few stages, and I can't really remember what  
11 they are well, but it would be something like 25  
12 percent, 50 percent, 100 percent, something like  
13 that.

14 And at each stage, we would submit our  
15 design to OLRTC who would review it and then give  
16 it to Capital Transit Partners, who would in turn  
17 review it. So OLRTC would review it and maybe make  
18 comments, which we would then change the design to  
19 reflect. Then it would go to Capital Transit  
20 Partners, who would review the design and make  
21 comments back through OLRTC.

22 CHRISTINE MAINVILLE: Did you have any  
23 concerns working with them or did any issues arise  
24 there?

25 DR. ROGER WOODHEAD: There was no great

1 issues. It was like most projects. The owner's  
2 engineer always has a lot of comments, and we had  
3 to make sure that we met -- we reflected those  
4 comments, and we would have meetings with them to  
5 discuss the comments and try to resolve them all  
6 before -- we had to resolve them all before it got  
7 to construction.

8 CHRISTINE MAINVILLE: And I understand  
9 from your earlier answer that you -- the starting  
10 point for your designs were the designs from  
11 Capital Transit Partners; correct?

12 DR. ROGER WOODHEAD: Yes, and then what  
13 we had done, or what the EJV had done in the  
14 proposal stage. So they had kind of built on to  
15 Capital Transit's design in the proposal stage and  
16 then made some changes to it.

17 CHRISTINE MAINVILLE: Okay, and did  
18 that unfold as you would expect and no particular  
19 concerns there?

20 DR. ROGER WOODHEAD: Yes, as expected,  
21 yeah, there were no -- I don't believe there were  
22 any issues. There were issues, but they were all  
23 resolved as on other projects.

24 CHRISTINE MAINVILLE: Okay. Did the  
25 EJV develop its own engineering management plan?



1 DR. ROGER WOODHEAD: Yes.

2 CHRISTINE MAINVILLE: And how was that  
3 aligned with OLRTC's system engineering management  
4 plan?

5 DR. ROGER WOODHEAD: So we had  
6 something called a design execution plan which we  
7 developed and gave to OLRTC for comments. I don't  
8 remember what was in there about systems  
9 engineering, to be honest.

10 CHRISTINE MAINVILLE: Do you recall,  
11 was there any integration of these plans, or how  
12 did that work?

13 DR. ROGER WOODHEAD: I don't recall.

14 CHRISTINE MAINVILLE: You don't recall.  
15 Do you know how it aligned with the City's output  
16 specifications and Capital Transit Partners'  
17 preliminary engineering?

18 DR. ROGER WOODHEAD: Not off the top of  
19 my head, but our plan would have been to, first of  
20 all, meet the RFP requirements. So we were always  
21 being compliant with the RFP for the City's  
22 contract. That was what we had to do. We had to  
23 make our design compliant, so that was a big part  
24 of our plan.

25 CHRISTINE MAINVILLE: We spoke about

1 the scope of the Joint Venture's work, but just to  
2 be clear, there was, of course, the main line?

3 DR. ROGER WOODHEAD: Yes.

4 CHRISTINE MAINVILLE: The train  
5 track -- sorry, the test track?

6 DR. ROGER WOODHEAD: Oh, I don't know.  
7 So I recall that the plan -- generally the test  
8 track is part of the track, and I recall the test  
9 track was the -- was part of the track out towards  
10 Blair.

11 So generally, you design -- you assign  
12 part of the track to be the test track, and it is a  
13 part of the track that first of all is close to the  
14 operation and maintenance centre, so when the  
15 vehicles arrive, you run them out on to the system  
16 and they are on the test track right away.

17 So I think the test track was between  
18 the operation and maintenance centre, and I am not  
19 sure if it was Blair Station, but you have to have  
20 a place where the vehicles can get up to their top  
21 speed so it has to be a certain length. And I  
22 think -- once again, this happened after I left.  
23 My memory of the test track was the part of the  
24 track that was to the east of the maintenance  
25 facility, but I could be wrong.

1 CHRISTINE MAINVILLE: And the EJV was  
2 also in charge of the maintenance facility and the  
3 yard?

4 DR. ROGER WOODHEAD: We were in charge  
5 of the design, yes.

6 CHRISTINE MAINVILLE: Of the designs.

7 DR. ROGER WOODHEAD: Right.

8 CHRISTINE MAINVILLE: And of the  
9 stations?

10 DR. ROGER WOODHEAD: Yes.

11 CHRISTINE MAINVILLE: Any other  
12 infrastructure or civil works?

13 DR. ROGER WOODHEAD: I guess  
14 everything, everything to do with the civil works,  
15 the geo-technical designs, the hydro geo-technical  
16 design, the power design, the tunnel design. We  
17 were in charge -- we did the final tunnel design.  
18 We did not do the -- the tunnel was built using a  
19 method called sequential excavation, so there was a  
20 separate design for the tunnel being built and then  
21 the -- it was a kind of thin shell that was put on  
22 the excavation, and then the final design was to  
23 pour a thicker concrete wall against that thin  
24 shell.

25 So we were involved in the -- we

1 designed the -- we did the final tunnel design but  
2 not, let's call it, the constructed -- the tunnel  
3 as it was initially constructed.

4 We designed the street changes, the  
5 changes to the streets, the utilities, landscaping,  
6 environmental. I am reading out of the contract,  
7 by the way, not from memory. Everything.

8 CHRISTINE MAINVILLE: Okay.

9 DR. ROGER WOODHEAD: Everything but the  
10 vehicles and the train control and the temporary  
11 works, any sort of temporary design.

12 CHRISTINE MAINVILLE: So --

13 DR. ROGER WOODHEAD: I am trying to  
14 think if there is anything else that was excluded.  
15 There might have been, but I don't remember.

16 CHRISTINE MAINVILLE: And what role  
17 then did the Joint Venture play in identifying the  
18 geo-tech risks?

19 DR. ROGER WOODHEAD: We would have -- I  
20 can't remember who did the investigation, whether  
21 OLRTC was in charge of doing the drilling. We  
22 would do a design based on the parameters, and we  
23 would do some sort of risk analysis.

24 We were involved in monitoring  
25 buildings for movements near the tunnel, for

1 instance. I can't remember exactly what our role  
2 was. But we would have been involved in some sort  
3 of geo-technical risk analysis.

4 CHRISTINE MAINVILLE: And the relevant  
5 mitigation?

6 DR. ROGER WOODHEAD: And the relevant  
7 mitigation, yes. I am saying yes, but I don't  
8 remember the details, but probably we would have  
9 been -- either reviewed the OLRTC's mitigations or  
10 we would have designed the mitigations.

11 CHRISTINE MAINVILLE: Did the EJV play  
12 a role in identifying other technical-related risks  
13 and the related mitigation plans, such as for the  
14 tracks and the stations and the rolling stock?

15 DR. ROGER WOODHEAD: Not for the  
16 rolling stock, but we would have done a risk  
17 analysis. It wouldn't particularly affect the  
18 stations, except for the systems inside the  
19 station. But we were involved in various risk  
20 analyses, yeah.

21 CHRISTINE MAINVILLE: But you don't  
22 recall any details of the risk analysis as it  
23 related to the geo-tech risks in particular  
24 surrounding where there were sink holes?

25 DR. ROGER WOODHEAD: I do have a bit of

1 knowledge of that. I know that we did not -- as I  
2 say, we did not design the temporary works for the  
3 station -- for the tunnel. So when there was that  
4 collapse on Rideau Street, that didn't involve the  
5 EJV.

6 CHRISTINE MAINVILLE: The --

7 DR. ROGER WOODHEAD: I believe we were  
8 involved in -- we were involved in designing the  
9 backfill when they filled the hole in, I think some  
10 things like that, and designing the temporary road  
11 surface. But we were not involved in the design of  
12 the support of the tunnel in its temporary  
13 position.

14 CHRISTINE MAINVILLE: Now, are you  
15 aware that the original plans for the tunnel  
16 changed to make it less deep, quite early on in the  
17 planning?

18 DR. ROGER WOODHEAD: I don't recall. I  
19 am just trying to think. No, I don't recall that,  
20 to be honest.

21 The engineers' design -- the City's  
22 preliminary design I think was a different type of  
23 construction method, maybe a bored tunnel, and  
24 we -- the OLRTC proposed this different method of  
25 construction, as I say, called sequential

1 excavation, which was not using a tunnel boring  
2 machine.

3 So I do recall that was part of OLRT's  
4 bid, nothing really to do with the EJV. The EJV  
5 were just involved in the permanent tunnel design.

6 CHRISTINE MAINVILLE: And do you recall  
7 any big red flags around this work or the design  
8 for the tunnelling?

9 DR. ROGER WOODHEAD: Not particularly,  
10 but tunnelling is a bit risky.

11 CHRISTINE MAINVILLE: Uhm-hmm.

12 DR. ROGER WOODHEAD: Period.

13 CHRISTINE MAINVILLE: How was the risk  
14 register developed, if you are able to speak to  
15 that?

16 DR. ROGER WOODHEAD: So somebody from  
17 SNC-Lavalin who had experience in risks developed  
18 the risk register during the proposal, and during  
19 the work, the EJV had a risk register which we  
20 would update regularly and that was something that  
21 Dominique did.

22 So I don't really recall the details,  
23 but we would look at these risks and whether they  
24 had been mitigated or not. But I don't recall what  
25 the risks were and what the mitigation plans were.

1 CHRISTINE MAINVILLE: Do you know how  
2 the risk register influenced the contingency  
3 portion of the budget development?

4 DR. ROGER WOODHEAD: That is a good  
5 question that I don't think I should answer. Am I  
6 right, Michael?

7 MICHAEL VRANTSIDIS: You are likely  
8 correct, Roger. If you have any post-award  
9 knowledge about that, you can give that, but if  
10 your information is based on your time while with  
11 OLRTC, I would refrain from that.

12 THE WITNESS: Okay. Post-award, I have  
13 no comments on the risk register.

14 CHRISTINE MAINVILLE: In terms of the  
15 budget generally, to the extent you are able to  
16 speak to it from your perspective working on the  
17 project at the EJV, are you able to speak to  
18 whether this was a tight budget or a sufficient  
19 budget for the project?

20 DR. ROGER WOODHEAD: From the EJV side,  
21 it was sufficient. We had had some discussions  
22 with OLRTC about our fee being too high. This was  
23 before -- so I do know this because I worked  
24 at -- also I have this knowledge from after we got  
25 the job, that the original fee that the EJV put



1 forward was considered to be too high, so there was  
2 negotiations about reducing the scope of the EJV  
3 and reducing the fee.

4 But in my opinion, the fee that the EJV  
5 put in was sufficient.

6 CHRISTINE MAINVILLE: In terms of  
7 design decisions and the value engineering, were  
8 there any decisions that were informed by --  
9 significant decisions informed by cost-saving  
10 measures?

11 DR. ROGER WOODHEAD: So generally on  
12 these projects during the RFP, that is where the  
13 contractor will try to look for ways to reduce the  
14 costs so that they can reduce their price.

15 After they get the job, there is not  
16 quite so much scope, but we did have some value  
17 engineering meetings early on with OLRTC in which  
18 we discuss various options to not necessarily save  
19 money, but to do a better job, maybe to do it  
20 faster or things, not always about saving money.  
21 It is to give better value for the money.

22 So we had some meetings early on with  
23 OLRTC about value engineering, and during the  
24 contract, there is always discussions about can we  
25 make some changes so that things can be more

1 economic.

2 But I don't really recall anything out  
3 of the ordinary.

4 CHRISTINE MAINVILLE: And anything that  
5 could have impacted ultimately on performance or  
6 the systems reliability?

7 DR. ROGER WOODHEAD: Not that I can  
8 think of, quite honestly, no, no.

9 CHRISTINE MAINVILLE: And of course,  
10 the --

11 DR. ROGER WOODHEAD: I can't recall.  
12 There might have been something, but I can't recall  
13 anything that we did that we made a big change.

14 CHRISTINE MAINVILLE: Okay. Of course,  
15 the project was delayed, but in terms of the  
16 original schedule, was it an overly accelerated  
17 schedule, to your estimation?

18 MICHAEL VRANTSIDIS: Counsel, sorry to  
19 interrupt, but it just sounds like you are shifting  
20 gears, and we are about halfway. I just wanted to  
21 check in with Roger to see if he needed a  
22 five-minute breather.

23 Roger, do you need to take a little  
24 break or are you content to keep going?

25 THE WITNESS: I am okay to keep going.

1 CHRISTINE MAINVILLE: Okay. Thank you,  
2 Counsel. If anybody -- maybe I'll stop in a bit,  
3 and we can check in again. But if anybody wants a  
4 break, let me know.

5 So was it an overly accelerated  
6 schedule, to your estimation?

7 DR. ROGER WOODHEAD: No. I think the  
8 schedule was quite do-able.

9 CHRISTINE MAINVILLE: Was there a  
10 master project schedule or an integrated schedule?

11 DR. ROGER WOODHEAD: Yes.

12 CHRISTINE MAINVILLE: And how were key  
13 engineering milestones established, including  
14 validation from all stakeholders, and incorporated  
15 into the master schedule?

16 DR. ROGER WOODHEAD: So we had an  
17 engineering schedule that tied into the main  
18 schedule, and we had milestone payments that were  
19 due on achieving certain milestones.

20 And I believe -- I am not sure they  
21 were the same milestone payments that OLRTC had  
22 with the City or not, but we had certain milestone  
23 payments that we -- that was how we got paid,  
24 generally.

25 And we had a schedule that tied in with

1 OLRTC's schedule.

2 CHRISTINE MAINVILLE: Do you know if  
3 the master schedule incorporated the rolling stock  
4 schedule?

5 DR. ROGER WOODHEAD: I am sure it did.  
6 But that -- there would be some EJV involvement in  
7 that in that the track had to be laid and the OCS  
8 wires had to be up in order for them to start  
9 testing vehicles.

10 But the manufacturing of the vehicles  
11 was not part of the engineering schedule, except  
12 that there had been a decision made that the  
13 vehicles would be finally assembled in the  
14 maintenance facility. So the construction of the  
15 maintenance facility was on the critical path.

16 CHRISTINE MAINVILLE: Right. And so  
17 was the EJV part of that discussion about the move  
18 to Ottawa for --

19 DR. ROGER WOODHEAD: No.

20 CHRISTINE MAINVILLE: No.

21 DR. ROGER WOODHEAD: They would have  
22 been made aware of it.

23 CHRISTINE MAINVILLE: And of course,  
24 you left in 2015, so I take it you wouldn't be  
25 aware of, over time, how delays to the schedule

1 were incorporated?

2 DR. ROGER WOODHEAD: No.

3 CHRISTINE MAINVILLE: Were there  
4 significant delays prior to your departure?

5 DR. ROGER WOODHEAD: That is a very  
6 good question. I would have to say that parts of  
7 engineering got delayed. I don't know that we ever  
8 delayed construction, so from memory, I don't know  
9 if we delayed construction. If we did, we didn't  
10 delay it by very much.

11 CHRISTINE MAINVILLE: All right. And  
12 in your --

13 DR. ROGER WOODHEAD: And in fact, I  
14 believe the maintenance facility was finished on  
15 schedule, which would be one of the key parts, and  
16 whether the test track was, that would be another  
17 key issue. The test track would also be important.

18 So I quite honestly don't know, except  
19 I do know the maintenance facility was finished on  
20 schedule.

21 CHRISTINE MAINVILLE: So was that in  
22 2015 before you left?

23 DR. ROGER WOODHEAD: I believe so, or  
24 it was pretty well close to being finished when I  
25 left.

1 CHRISTINE MAINVILLE: And do you recall  
2 whether it was in -- well, it was suitable for  
3 vehicle manufacturing when it was completed?

4 DR. ROGER WOODHEAD: That I don't know,  
5 but we made changes to the design to make it  
6 suitable for vehicle manufacturing.

7 CHRISTINE MAINVILLE: And do you have  
8 any view on that, just based on other projects, of  
9 the suitability generally of that facility?

10 DR. ROGER WOODHEAD: No, I don't  
11 have -- I don't have any comments. In many ways,  
12 it was a good idea to increase the Canadian  
13 content. The only downside was that if the vehicle  
14 was delayed, then that would delay the completion  
15 of the maintenance facility. But if the vehicles  
16 were delayed, it wouldn't have really made any  
17 difference.

18 So that was the downside, you were  
19 tying the completion of the maintenance facility  
20 into the vehicle manufacturing, but in reality, if  
21 the vehicles weren't ready, it wouldn't have made  
22 any difference if the maintenance facility was  
23 ready.

24 CHRISTINE MAINVILLE: How do you mean  
25 if -- don't they need the facility to build the

1 vehicles? How do you mean if the vehicles --

2 DR. ROGER WOODHEAD: Sorry, sorry, if  
3 the vehicles were finished elsewhere. The other  
4 option was to build all -- to build the vehicles in  
5 wherever they were built in the U.S.

6 CHRISTINE MAINVILLE: Uhm-hmm.

7 DR. ROGER WOODHEAD: That would have  
8 been the other option.

9 CHRISTINE MAINVILLE: So how would that  
10 have impacted the completion of the facility in  
11 Ottawa?

12 DR. ROGER WOODHEAD: It would have been  
13 a bit quicker to complete the facility because you  
14 wouldn't have had to do these temporary things, and  
15 if the vehicles were late being fabricated, it  
16 meant that the vehicle facility could not be  
17 totally finished ready for maintenance because the  
18 vehicles were still being built in there.

19 CHRISTINE MAINVILLE: Right.

20 DR. ROGER WOODHEAD: Although you could  
21 be still using part of the facility, so...

22 CHRISTINE MAINVILLE: And I understand  
23 that the plan was always to build all but the first  
24 two vehicles in Ottawa at the MSF.

25 DR. ROGER WOODHEAD: Finish the

1 first -- finish the vehicles. I believe they were  
2 mostly built in the U.S. and just their final  
3 assembly was in Ottawa.

4 CHRISTINE MAINVILLE: I see. So when  
5 the decision was made to move the first two, in  
6 addition to additional scope on the other 30-some  
7 LRVs, there were -- that led to design changes to  
8 the facility; is that what you are saying?

9 DR. ROGER WOODHEAD: No, I don't recall  
10 an issue about the first two vehicles, to be  
11 honest.

12 CHRISTINE MAINVILLE: Okay, so your  
13 understanding is there were design changes that  
14 simply resulted from a change in terms of the scope  
15 of assembly that was to take place in Ottawa?

16 DR. ROGER WOODHEAD: Correct. The  
17 facility was actually designed so that the vehicles  
18 could be assembled initially, and then afterwards  
19 it was converted to vehicle maintenance.

20 CHRISTINE MAINVILLE: Right.

21 DR. ROGER WOODHEAD: So there was some  
22 temporary walls put up, for instance.

23 CHRISTINE MAINVILLE: Okay. So how  
24 significant were the design changes?

25 DR. ROGER WOODHEAD: I don't believe



1 they were that significant.

2 CHRISTINE MAINVILLE: Okay. Did Alstom  
3 have any involvement in the design of the MSF, at  
4 least as it related to the vehicle assembly  
5 portion?

6 DR. ROGER WOODHEAD: I am sure they  
7 did, but I can't recall us meeting with Alstom, but  
8 we probably did.

9 CHRISTINE MAINVILLE: In your monthly  
10 reports, the EJV, I think it was tracking progress  
11 against a planned deliverable baseline. Was this  
12 approved by the Rail Implementation Office or RTG?

13 DR. ROGER WOODHEAD: It was approved by  
14 OLRTC.

15 CHRISTINE MAINVILLE: OLRTC. And  
16 during the detailed design process, how did the EJV  
17 manage the engineering process between RIO or the  
18 City, OC Transpo, OLRTC and Alstom and Thales.

19 DR. ROGER WOODHEAD: So we were a  
20 subcontractor to OLRTC, and they always made sure  
21 we were aware of that. So our dealings were always  
22 with OLRTC, and we never did anything without OLRTC  
23 knowing about it.

24 So we would never receive direct  
25 instructions from Alstom or Thales or the City, and

1 any instructions we did get, OLRTC were supposed to  
2 vet them to make sure that what we got was what we  
3 were supposed to do.

4 CHRISTINE MAINVILLE: So there was not  
5 much or any direct interfacing with the City?

6 DR. ROGER WOODHEAD: Not -- we had  
7 meetings with the City, lots of meetings with the  
8 City, but OLRTC would always be there and they  
9 would manage the meetings.

10 We had a weekly project meeting with  
11 the City, if I remember rightly, that was managed  
12 by OLRTC.

13 CHRISTINE MAINVILLE: And was there an  
14 engineering change control process established?

15 DR. ROGER WOODHEAD: Yes.

16 CHRISTINE MAINVILLE: Could you talk  
17 about that and how many engineering changes were  
18 issued? I guess you can only speak to when you  
19 were there.

20 DR. ROGER WOODHEAD: Oh, I don't know.  
21 Probably a lot.

22 CHRISTINE MAINVILLE: Do you recall the  
23 nature and reason for the majority of these  
24 changes?

25 DR. ROGER WOODHEAD: Not really, no. I

1 mean, I can tell you that we were not perfect, that  
2 we did make some mistakes. We fell behind schedule  
3 several times. So I don't want to pretend that we  
4 were perfect.

5 CHRISTINE MAINVILLE: What were the  
6 main issues?

7 DR. ROGER WOODHEAD: I think, to be  
8 honest, the main issue is it is a big project and  
9 there is a lot of interfaces, a lot of interaction,  
10 a lot of people involved. We were scattered in  
11 various places. They are difficult projects to  
12 manage.

13 CHRISTINE MAINVILLE: Were there too  
14 many interfaces on this project, from your  
15 perspective?

16 DR. ROGER WOODHEAD: Too many? No.  
17 No. I think it would be typical.

18 CHRISTINE MAINVILLE: Typical.

19 DR. ROGER WOODHEAD: The slight -- if I  
20 compare with Canada Line, Canada Line was one  
21 contract where SNC-Lavalin looked after the  
22 vehicles, the train control, absolutely everything.  
23 Here we had the split with the EJV not being --  
24 designing the vehicles or the train control, and  
25 some various other minor things.

1                   And there was an engineering  
2 subcontract here which we didn't have on Canada  
3 Line either, so that made things more complicated.  
4 It made -- the interfaces increased.

5                   CHRISTINE MAINVILLE: Right. So there  
6 were added levels of complexity, at least as it  
7 compares to the Canada Line?

8                   DR. ROGER WOODHEAD: Yes.

9                   CHRISTINE MAINVILLE: And that can  
10 create some level of risk?

11                  DR. ROGER WOODHEAD: Correct.

12                  CHRISTINE MAINVILLE: And what about  
13 the fact that OC Transpo was not a mature train  
14 operator?

15                  DR. ROGER WOODHEAD: Yeah, that would  
16 have some issues, but once again, because we were  
17 not heavily involved in the operations and  
18 maintenance, we would have some meetings with OC  
19 Transpo where OC Transpo were there. OC Transpo  
20 were involved in the station design and the logos  
21 and things like that. I know they were involved in  
22 that. But we didn't have a lot of involvement with  
23 OC Transpo.

24                  CHRISTINE MAINVILLE: Should we be able  
25 to find an engineering change log?

1 DR. ROGER WOODHEAD: Yes.

2 CHRISTINE MAINVILLE: Did that exist?

3 DR. ROGER WOODHEAD: Yes, yeah.

4 CHRISTINE MAINVILLE: Michael, if you  
5 are able to follow up on that, and if it has been  
6 produced, to identify it for us, that would assist.

7 [Court Reporter intervenes for  
8 clarification.]

9 CHRISTINE MAINVILLE: I just asked  
10 Counsel if he would be able to follow up on that,  
11 and if it has been produced already, to identify it  
12 for us.

13 U/T DR. ROGER WOODHEAD: And I agreed.

14 CHRISTINE MAINVILLE: Should we take a  
15 short break, or are we okay to proceed?

16 [Discussion Off The Record.]

17 -- RECESSED AT 3:56 P.M.

18 -- RESUMED AT 4:12 P.M.

19 CHRISTINE MAINVILLE: Dr. Woodhead, you  
20 spoke a bit about this already, but I just want to  
21 be clear on how the engineering milestone reviews  
22 performed for design completion reviews, how those  
23 were done.

24 DR. ROGER WOODHEAD: So in our contract  
25 we had certain milestones, not necessarily

1 finalizing of design, but partial designs, that  
2 when we achieved them we would get OLRTC to agree  
3 that we had achieved them.

4 [Court Reporter intervenes for  
5 clarification.]

6 DR. ROGER WOODHEAD: Yes, so we  
7 would -- when we thought we had reached these  
8 milestones, we would discuss with OLRTC and get  
9 them to accept that we had met the milestones.

10 CHRISTINE MAINVILLE: Including quality  
11 compliance reviews?

12 DR. ROGER WOODHEAD: Yes, yeah.

13 CHRISTINE MAINVILLE: And how were  
14 those reviews validated by other key stakeholders,  
15 for instance, the City?

16 DR. ROGER WOODHEAD: I don't really  
17 know, to be honest.

18 CHRISTINE MAINVILLE: Okay.

19 DR. ROGER WOODHEAD: I don't know.  
20 That would have to be through OLRTC.

21 CHRISTINE MAINVILLE: Okay.

22 DR. ROGER WOODHEAD: Yeah, it was just  
23 in the contract with OLRTC.

24 CHRISTINE MAINVILLE: Okay. And was  
25 there an error and omission log maintained?

1 DR. ROGER WOODHEAD: I don't believe  
2 so.

3 CHRISTINE MAINVILLE: How did the EJV  
4 manage the partnership between the Joint Venture  
5 entities?

6 DR. ROGER WOODHEAD: We had a  
7 weekly -- sorry, we had a monthly -- there was a  
8 monthly EJV meeting where two senior  
9 representatives of MMM, two senior representatives  
10 of SNC-Lavalin, would meet with Dominique and  
11 myself and perhaps a few other people, I don't  
12 recall, and it would be a monthly meeting, and we  
13 would discuss the project in general.

14 CHRISTINE MAINVILLE: And how effective  
15 would you say the partnership was in managing the  
16 engineering deliverables?

17 DR. ROGER WOODHEAD: I think it was  
18 pretty effective, yeah.

19 CHRISTINE MAINVILLE: And you spoke  
20 about the respective roles a little bit, but were  
21 the accountabilities clearly divided as between MMM  
22 and SNC?

23 DR. ROGER WOODHEAD: Yes.

24 CHRISTINE MAINVILLE: How so?

25 DR. ROGER WOODHEAD: Well, in the fee

1 arrangement, so each company had a certain scope of  
2 work which they were responsible for and they would  
3 charge the Joint Venture for that work when they  
4 achieved certain milestones.

5           There were probably a few items that  
6 were joint, but generally things like the -- just  
7 the stations were designed by architects, but there  
8 would be certain items that were in MMM's scope. I  
9 believe the electrical and mechanical for some of  
10 the stations, for instance, would be in their scope  
11 and SNC-Lavalin would have electrical and  
12 mechanical for other stations. And SNC might have  
13 designed some bridges and MMM might have designed  
14 other bridges.

15           CHRISTINE MAINVILLE: Okay. And we  
16 spoke a bit about the schedule, but what role did  
17 the EJV have in developing the construction  
18 schedules?

19           DR. ROGER WOODHEAD: Zero.

20           CHRISTINE MAINVILLE: And what was its  
21 role in project delivery? I don't think you -- I  
22 think you indicated there was no involvement in  
23 construction, right?

24           DR. ROGER WOODHEAD: Correct. Our role  
25 was purely to supply the engineering and to



1 occasionally visit the site and inspect the work on  
2 the site.

3 CHRISTINE MAINVILLE: And during your  
4 time there, were there any issues arising in terms  
5 of the construction?

6 DR. ROGER WOODHEAD: There would be  
7 quality issues on the construction, yeah. I don't  
8 recall what they were, but sometimes the  
9 construction wouldn't be as we had designed,  
10 not -- I don't believe there were any great issues,  
11 but I don't really recall.

12 CHRISTINE MAINVILLE: Okay. And during  
13 the construction field works, what were the  
14 protocols for field engineering works?

15 DR. ROGER WOODHEAD: So we just -- we  
16 were not full-time on-site. We would make site  
17 visits at certain times during the construction.

18 CHRISTINE MAINVILLE: Did EJV provide  
19 any input in variations review?

20 DR. ROGER WOODHEAD: Variations between  
21 OLRTC and the City, do you mean?

22 CHRISTINE MAINVILLE: Or, well, design  
23 variations.

24 DR. ROGER WOODHEAD: If the City wanted  
25 a change, then we would be involved in presumably

1 developing a fee proposal for that change, and we  
2 would pass that through OLRTC.

3 CHRISTINE MAINVILLE: Are you aware of  
4 what aspects of the design were subject to City  
5 approval?

6 DR. ROGER WOODHEAD: I believe most of  
7 it was subject to City approval, or City review.  
8 Whether that was the same as approval, I don't  
9 recall, but I believe nearly all our designs were  
10 submitted to the City.

11 CHRISTINE MAINVILLE: Do you have a  
12 sense of the level of oversight that the City  
13 exercised over the project?

14 DR. ROGER WOODHEAD: So just our  
15 designs, they would sometimes come back with 2 or  
16 300 comments on our designs, so I would say in some  
17 cases the oversight on engineering was very high.

18 CHRISTINE MAINVILLE: Okay. How did  
19 that compare to other projects?

20 DR. ROGER WOODHEAD: It was the same.

21 CHRISTINE MAINVILLE: Okay.

22 DR. ROGER WOODHEAD: It is not very  
23 different.

24 CHRISTINE MAINVILLE: Were there more  
25 prescriptive requirements as opposed to

1 performance-based?

2 DR. ROGER WOODHEAD: Once again, it is  
3 the same as other P3s these days. I don't want to  
4 editorialize on P3s, the state of P3s, but these  
5 days the owners make a lot of comments generally.

6 CHRISTINE MAINVILLE: Having worked on  
7 a number of other projects, I wonder if you are  
8 able to speak to some best practices, for instance,  
9 as it relates to a burn-in or vetting-in period for  
10 the rolling stock?

11 DR. ROGER WOODHEAD: My only comment on  
12 that would be coming back to Canada Line, that  
13 there was a long period of, let's call it, burning  
14 in. The line was basically delivered in four or  
15 five separate pieces, and the first piece was  
16 delivered probably about two years before  
17 operations started. So that had a long time vetted  
18 in.

19 The last piece was delivered at two or  
20 three months before, before the project reached  
21 service commencement, but the main thing was this  
22 trial running which was 28 or 30 days -- was  
23 it -- no, sorry, it might have been two weeks.  
24 Very important was trial running where we made sure  
25 the system would run for three days in succession

1 with a very high availability. In other words, we  
2 were meeting the timetable with a level of  
3 performance of more than -- I think it was 85  
4 percent, and then after that, we did all sorts of  
5 testing, like we would run more than the schedule,  
6 faster than the schedule, with more trains, and we  
7 would test various failure scenarios.

8 And I am not sure what happened in  
9 Ottawa, but I would say that is very, very  
10 important.

11 [Court Reporter intervenes for  
12 clarification.]

13 CHRISTINE MAINVILLE: In Ottawa,  
14 correct? I didn't want to put words in your mouth.

15 DR. ROGER WOODHEAD: I said I don't  
16 know what happened in Ottawa.

17 CHRISTINE MAINVILLE: And when -- and  
18 you say "it is very important", you mean a fairly  
19 thorough or extended trial running period?

20 DR. ROGER WOODHEAD: Yes.

21 CHRISTINE MAINVILLE: When would the  
22 criteria for that typically be devised? How would  
23 that get planned?

24 DR. ROGER WOODHEAD: So I actually  
25 wrote the trial running plan on Canada Line, and I

1 am guessing it would be about six months before  
2 trial running. And the contract was fairly  
3 specific about what had to be done.

4 CHRISTINE MAINVILLE: And so when you  
5 wrote the criteria six months before trial running,  
6 you started from the contract but had to build on  
7 that?

8 DR. ROGER WOODHEAD: Yes, yes.

9 CHRISTINE MAINVILLE: And did you rely  
10 on other templates or projects to build that out?

11 DR. ROGER WOODHEAD: No, I think I did  
12 it myself. Yeah, no, I think I wrote it myself.  
13 And then -- but it was circulated to 20 or 30  
14 people for comment, and it took a long time to get  
15 from first draft to final draft, probably a month.

16 CHRISTINE MAINVILLE: And do I  
17 understand from your evidence that the criteria  
18 were intended to be high enough that the  
19 reliability would be very strong?

20 DR. ROGER WOODHEAD: Yes, correct. As  
21 I say, we had to run for, I think it was, three  
22 days in succession with a very high availability,  
23 and if we failed one day -- or if we failed on any  
24 day, we had to start again and run for the three  
25 days in succession.

1 CHRISTINE MAINVILLE: Three days in  
2 succession?

3 DR. ROGER WOODHEAD: Yes.

4 CHRISTINE MAINVILLE: I think we have  
5 heard some evidence that there was a view that the  
6 12-day period for which the Ottawa LRT had to run  
7 in consecutive days came from, I think, the Canada  
8 Line; is that not accurate?

9 DR. ROGER WOODHEAD: It wouldn't be for  
10 12 consecutive days of high availability. It would  
11 be for 12 days of trial running, but only part of  
12 that would be for the availability test. The rest  
13 would be various other tests.

14 CHRISTINE MAINVILLE: Okay. So it just  
15 had to run for three consecutive days in terms of  
16 availability. How would that get impacted by --  
17 well, what would happen the rest of the 12 days  
18 then, just so I understand?

19 DR. ROGER WOODHEAD: So one day we ran  
20 every train possible with a very short headway. So  
21 the test for Canada Line was on, I think, a  
22 three-minute headway between trains. And we only  
23 needed to run -- I can't remember how many trains.  
24 We didn't need to run every train that we had.

25 So one day we ran every train that we

1 had with a headway of, say, 90 seconds or 120  
2 seconds, whatever the minimum time period would be  
3 for the system, and then we would do various tests,  
4 like somebody would deliberately open a door and  
5 see how long it took to react to that and how it  
6 would react.

7 And I don't remember what else we did,  
8 but there were various failure scenarios that we  
9 tested.

10 CHRISTINE MAINVILLE: Do you recall how  
11 failure events were dealt with if, let's say, there  
12 were several events but all related -- or many  
13 related to the same or a similar issue? Do you  
14 know how that would be assessed?

15 DR. ROGER WOODHEAD: Are we talking  
16 about Canada Line or Confederation Line?

17 CHRISTINE MAINVILLE: The Canada Line.

18 DR. ROGER WOODHEAD: I don't recall  
19 actually. I don't know if we tried to simulate  
20 more than one failure at a time. We might have  
21 done. As I say, there was a lot of failure testing  
22 done and I don't remember what they are. One, for  
23 instance, is we would fail a train in the middle of  
24 the line and make sure that the other trains could  
25 go around it.

1 CHRISTINE MAINVILLE: You are talking  
2 about planned failures, but what about things that  
3 just froze?

4 DR. ROGER WOODHEAD: During testing  
5 and --

6 CHRISTINE MAINVILLE: Yes, during trial  
7 running.

8 DR. ROGER WOODHEAD: I don't know that  
9 anything untoward happened. We were just --

10 CHRISTINE MAINVILLE: It was smooth  
11 running?

12 DR. ROGER WOODHEAD: Yes, smooth trial  
13 running, yeah.

14 CHRISTINE MAINVILLE: Smooth trial  
15 running. And do you have any knowledge of what was  
16 planned for the Ottawa LRT or who would have been  
17 responsible for planning that?

18 DR. ROGER WOODHEAD: I don't know. It  
19 would be OLRTC or the maintenance contractor. I  
20 don't know.

21 CHRISTINE MAINVILLE: Okay.

22 DR. ROGER WOODHEAD: And presumably OC  
23 Transpo might have been involved because they had  
24 to supply drivers. So Canada Line was driverless.

25 CHRISTINE MAINVILLE: And what about



1 integration testing? Do you have any knowledge of  
2 what the plans were for the Confederation Line?

3 DR. ROGER WOODHEAD: No, not really,  
4 no.

5 CHRISTINE MAINVILLE: How are the  
6 safety requirements typically devised?

7 DR. ROGER WOODHEAD: That is a good  
8 question. So once again, on Canada Line there was  
9 an organization called the BC Safety Authority who  
10 came to inspect -- well, I wouldn't say inspect.  
11 Who came to visit the project frequently during  
12 construction, have a walk-through, and they were  
13 very involved in testing and commissioning. They  
14 would have an observer at trial running, for  
15 instance. They would observe all our critical  
16 tests, like not part of trial running, but we did a  
17 test of the tunnel ventilation. The BC Safety  
18 Authority would be witnessing that test.

19 So they witnessed a lot of tests. And  
20 then they eventually signed off on a safety  
21 certificate.

22 CHRISTINE MAINVILLE: Do you know who  
23 had that role in the Ottawa project?

24 DR. ROGER WOODHEAD: No.

25 CHRISTINE MAINVILLE: And then in terms

1 of what might be called a slow start or a  
2 progressive start to operations, are you able to  
3 speak to what you have seen and what best practices  
4 might be in that regard?

5 DR. ROGER WOODHEAD: No, but on Canada  
6 Line we started -- and, once again, I was not  
7 really involved at the -- well, I was a bit  
8 involved at the time. We started with the  
9 operating -- or the operating team started to  
10 operate the line more and more, and then we had to  
11 get TransLink to accept the system.

12 And once TransLink accepted the  
13 system - this was about a week after we had got  
14 approval for the project, approval to start service  
15 commencement - TransLink commenced the service one  
16 day, and it was free the first day, so people could  
17 ride on the system free for a day. And then the  
18 next day, it just started running.

19 So it was just a -- there was no slow  
20 start.

21 CHRISTINE MAINVILLE: Do you mean  
22 immediately after the revenue service availability  
23 date?

24 DR. ROGER WOODHEAD: No, no, it  
25 is -- yeah, immediately after -- I don't know if it

1 was the next day or they waited. So I would say it  
2 wasn't the next day because they had to kind of  
3 publicize that the system was going to start  
4 running probably in a week. In a week's time, the  
5 system is going to start running. It is going to  
6 be free the next day. The day after, all the buses  
7 are going to stop running and you are going to have  
8 to take the train.

9 CHRISTINE MAINVILLE: Other than the  
10 systems integration issue that we spoke of, were  
11 there any points of contention between the EJV and  
12 OLRTC during your time on the project that stand  
13 out for you?

14 DR. ROGER WOODHEAD: I would just say  
15 it wasn't a smooth relationship, but there is --  
16 there was no other great disputes.

17 CHRISTINE MAINVILLE: You wouldn't call  
18 it a collaborative relationship?

19 DR. ROGER WOODHEAD: No.

20 CHRISTINE MAINVILLE: And why was that,  
21 from your perspective? Was this related to the  
22 level of experience that you mentioned earlier,  
23 OLRTC's experience on transit systems?

24 DR. ROGER WOODHEAD: I think it was  
25 partly to do with the fact that we were a

1 subcontractor, just a subcontractor, and they  
2 treated us like a subcontractor. Like the guy who  
3 comes in and does the painting for you, we were  
4 just a subcontractor, and that is the way they  
5 treated us.

6 CHRISTINE MAINVILLE: And that is not  
7 usually the case, in your experience?

8 DR. ROGER WOODHEAD: Unfortunately, it  
9 wasn't on Canada Line, but on projects since, it is  
10 my experience, yeah.

11 CHRISTINE MAINVILLE: And you mean  
12 treated as a subcontractor as opposed to a partner  
13 of sorts?

14 DR. ROGER WOODHEAD: Yes, yes.

15 CHRISTINE MAINVILLE: Do you have any  
16 view -- recognizing that you left the project  
17 fairly early on in the construction, do you have a  
18 view of what circumstances may have led to or  
19 contributed to the breakdowns and derailments that  
20 the project -- or the system encountered down the  
21 road?

22 DR. ROGER WOODHEAD: No. No, it was a  
23 surprise to me to find out that there were problems  
24 on the project, and I don't have a view as to why,  
25 because there are -- Alstom is a competent vehicle

1 manufacturer. Thales are a very -- I don't know if  
2 there is problems with Thales, but there are  
3 competent companies on this project. I have no  
4 idea.

5 CHRISTINE MAINVILLE: Are there  
6 different requirements -- I think I have asked you  
7 this before, but were there -- when you compare it  
8 to the other rail projects you did, were there  
9 particular requirements relating to the rolling  
10 stock in this case that differed significantly from  
11 others?

12 DR. ROGER WOODHEAD: No, no, no. No,  
13 not at all.

14 CHRISTINE MAINVILLE: Were you familiar  
15 with the train model that Alstom was providing on  
16 the project, the Citadis Spirit?

17 DR. ROGER WOODHEAD: If I put my EJV  
18 hat on, it was known for a long -- for awhile that  
19 we were using the Citadis Spirit. The EJV wouldn't  
20 need to know a lot about it except for the  
21 parameters that would affect their design.

22 CHRISTINE MAINVILLE: And did you have  
23 any view as to whether it was a proven vehicle, a  
24 tried and tested model?

25 DR. ROGER WOODHEAD: From the EJV side,

1 I wouldn't really have known.

2 CHRISTINE MAINVILLE: Okay. And if I  
3 were to one day interview you wearing that hat, you  
4 may have another answer?

5 DR. ROGER WOODHEAD: I may have, yes.

6 CHRISTINE MAINVILLE: I will just check  
7 with my co-counsel if he has any follow-up  
8 questions. I might just ask you, is there anything  
9 I haven't asked you about that you think the  
10 Commission should know?

11 DR. ROGER WOODHEAD: Not really. As I  
12 say, it has been a surprise to me that these  
13 vehicles are not operating well, a big surprise.

14 I would say, you know, there are three  
15 train manufacturers in the world that are  
16 well-known. There is Bombardier, who now have been  
17 bought by Alstom. There is Siemens and there is  
18 Alstom. And they all at the time had very good  
19 reputations, and I think they still do.

20 So it is -- I have no idea. It was a  
21 big surprise to me that there were problems.

22 CHRISTINE MAINVILLE: Do you know a  
23 company called CAF?

24 DR. ROGER WOODHEAD: Yes.

25 CHRISTINE MAINVILLE: What can you say

1 about them?

2 DR. ROGER WOODHEAD: As the EJV,  
3 nothing.

4 CHRISTINE MAINVILLE: Okay. In terms  
5 of your broader experience, you are not able to  
6 say, just as you have said in respect of the  
7 others, in terms of their experience or expertise  
8 in rolling stock?

9 DR. ROGER WOODHEAD: They are not as  
10 big as the others I mentioned.

11 CHRISTINE MAINVILLE: Okay. Are they  
12 Canadian -- they are Canadian-based?

13 DR. ROGER WOODHEAD: No, they are  
14 Spanish.

15 CHRISTINE MAINVILLE: Spanish.  
16 Anthony, do you have any follow-up  
17 questions?

18 ANTHONY IMBESI: No, I don't. Thanks,  
19 Christine.

20 CHRISTINE MAINVILLE: Michael, do you  
21 have any questions you want to ask?

22 MICHAEL VRANTSIDIS: I do have a few.  
23 I know we are short on time, so I am happy to do it  
24 in rapid fire action.

25 So, Roger, I really just wanted to

1 clear up, and I think some of this has been covered  
2 by Counsel already, but it mostly has to deal with  
3 scope and involvement, if you'll indulge me.

4 Can you tell me what the EJV's role was  
5 in regards to procurement for OLRT-wide and  
6 Confederation Line?

7 DR. ROGER WOODHEAD: I believe we had  
8 zero involvement in procurement.

9 MICHAEL VRANTSIDIS: Okay, and --

10 DR. ROGER WOODHEAD: There might be a  
11 few minor items we were involved with procuring,  
12 but generally no involvement.

13 MICHAEL VRANTSIDIS: And how about the  
14 EJV's role in operations and maintenance?

15 DR. ROGER WOODHEAD: Zero involvement.

16 MICHAEL VRANTSIDIS: Okay, and the  
17 EJV's role in the selection of Alstom and Thales?

18 DR. ROGER WOODHEAD: Zero.

19 MICHAEL VRANTSIDIS: And the EJV's  
20 involvement in rolling stock delivery?

21 DR. ROGER WOODHEAD: Zero.

22 MICHAEL VRANTSIDIS: Okay, and other  
23 than a few test plans that you mentioned to Counsel  
24 earlier, what was the EJV's role in testing and  
25 commissioning?



1 DR. ROGER WOODHEAD: I wasn't there at  
2 the time, so I don't know, but our contract would  
3 have specified witnessing of some tests, but  
4 nothing -- mostly to make sure the infrastructure  
5 was suitable for the vehicle and the train control.

6 MICHAEL VRANTSIDIS: Would you agree  
7 with me if I said that OLRTC was ultimately  
8 responsible for the final testing and  
9 commissioning?

10 DR. ROGER WOODHEAD: Yes.

11 MICHAEL VRANTSIDIS: And are you aware  
12 of any design issues that have contributed to any  
13 of the known derailments that EJV was involved in?

14 DR. ROGER WOODHEAD: I am not aware of  
15 any, no.

16 MICHAEL VRANTSIDIS: Do you know who  
17 SEMP is?

18 DR. ROGER WOODHEAD: I do now.

19 MICHAEL VRANTSIDIS: Okay. Did you  
20 know if they were involved on Confederation Line?

21 DR. ROGER WOODHEAD: I found -- after  
22 our discussions, I found an email. Then I did know  
23 that they were involved, yes.

24 MICHAEL VRANTSIDIS: And do you know  
25 what their role on the project was?

1 DR. ROGER WOODHEAD: They were somehow  
2 involved in system integration. I am not sure what  
3 their exact scope was, but they were involved with  
4 system integration, I believe.

5 MICHAEL VRANTSIDIS: And do you know  
6 who they were hired by?

7 DR. ROGER WOODHEAD: OLRTC.

8 MICHAEL VRANTSIDIS: You mentioned  
9 earlier that the City provided reviews to the EJV's  
10 designs. Do you recall that?

11 DR. ROGER WOODHEAD: Yes.

12 MICHAEL VRANTSIDIS: Okay. Did the  
13 City review all of the EJV's designs?

14 DR. ROGER WOODHEAD: I believe so.  
15 There may have been some that they didn't review,  
16 but I believe they reviewed everything.

17 MICHAEL VRANTSIDIS: Okay. And would  
18 OLRTC review the designs in addition to the City?

19 DR. ROGER WOODHEAD: Yes. So the  
20 process was we submitted our design to OLRTC who  
21 reviewed them, commented on them maybe. If they  
22 made comments, they would check that we had taken  
23 account of their comments, and they would then  
24 approve and submit them to the City.

25 So our process was to submit the

1 drawings to OLRTC, who would review them and then  
2 submit them to the City.

3 MICHAEL VRANTSIDIS: Okay, so by the  
4 time you got comments back on any of your design  
5 packages, both OLRTC and the City would have  
6 reviewed and commented on them?

7 DR. ROGER WOODHEAD: Correct, and each  
8 of them had a time frame to do their review. So it  
9 might be close to a month by the time we got City  
10 comments back.

11 MICHAEL VRANTSIDIS: And shifting gears  
12 back to the proposal, I think you might have  
13 mentioned already that the proposal was based on an  
14 incomplete design. Are you able to tell me how far  
15 along design was at the time of the proposal?

16 DR. ROGER WOODHEAD: It would be about  
17 10 to 15 percent, which would be typical for all  
18 these projects.

19 MICHAEL VRANTSIDIS: Okay. And OLRTC  
20 would then be responsible for procuring the project  
21 based on a 10 to 15 percent design?

22 DR. ROGER WOODHEAD: Correct.

23 MICHAEL VRANTSIDIS: Dr. Woodhead,  
24 those are all my questions for you.

25 DR. ROGER WOODHEAD: Thanks.

1 CHRISTINE MAINVILLE: Could I just ask  
2 you, in terms of SEMP's involvement, do you know  
3 what the time frame would be for that?

4 DR. ROGER WOODHEAD: I wasn't at all  
5 involved with them, and recently I have seen an  
6 email from them. I could check in my files and  
7 find what the date was, but I would have to just  
8 check. I don't know.

9 CHRISTINE MAINVILLE: That is fine, but  
10 to your recollection, were they involved at all  
11 when you were there up until 2015?

12 DR. ROGER WOODHEAD: No.

13 CHRISTINE MAINVILLE: Would you have  
14 been aware if they had been?

15 DR. ROGER WOODHEAD: I think so.

16 CHRISTINE MAINVILLE: Thank you. We  
17 can go off record.

18 [Discussion Off The Record.]

19

20 -- Adjourned at 4:46 p.m.

21

22

23

24

25

1 REPORTER'S CERTIFICATE

2  
3 I, DEANA SANTEDICOLA, RPR, CRR,  
4 CSR, Certified Shorthand Reporter, certify:

5 That the foregoing proceedings were  
6 taken before me at the time and place therein set  
7 forth;

8 That the statements of the  
9 presenters and all comments made at the time of the  
10 meeting were recorded stenographically by me and  
11 were thereafter transcribed;

12 That the foregoing is a true and  
13 certified transcript of my shorthand notes so  
14 taken.

15  
16  
17  
18 Dated this 19th day of April, 2022.

19  
20 

21 \_\_\_\_\_  
22 NEESONS, A VERITEXT COMPANY,

23 PER: DEANA SANTEDICOLA, RPR, CRR, CSR  
24  
25

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